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IT SECURITY COMPANIES TO WATCH

Mobile phone protection, virtualization security and detecting botnets are among focus areas for our picks as this year's security companies worth keeping an eye on. **PAGE 14**

HUAN TRAN



Google directs attack at Windows

But can the search giant hit the mark with Chrome OS?

BY JOHN FONTANA

GOOGLE HAS POSITIONED itself for a bold run at Microsoft's core businesses, but industry watchers say the search giant has a long road ahead.

Google last week unveiled its Chrome OS project, an open source, Linux-based lightweight operating system for Internet-centric computing. The announcement comes on the heels of Google's removal of the beta labels from its Google Apps services, its debut of Google Voice, and the launch of an industry-rallying campaign called "Let's make the Web faster."

Google is targeting Microsoft's core businesses — the client operating system and Office

Mobile Web apps growing up

Chrome OS has thrown a spotlight on a number of emerging Web technologies that promise to transform mobile application development. **PAGE 10**

— that earned the company nearly \$36 billion in 2008, and Microsoft's emerging online services strategy.

Google's rapid fire public relations over the past two weeks wasn't so much coincidence as it was the fact that Microsoft is set to make an online services splash this week at its annual conference of partners, a juggernaut

Google may need to emulate to be successful.

In addition, Microsoft is just more than three months from delivering its next operating system — Windows 7, which includes a version for the netbook platform Google is targeting with Chrome OS. Google's operating system won't ship for 18 months.

See **Chrome**, page 10

'Hidden' IPv6 traffic poses risk

BY CAROLYN DUFFY MARSAN

IPv6 — THE next-generation Internet protocol — isn't keeping too many U.S. CIOs and network managers up worrying at night. But perhaps it should.

Experts say that most U.S. organizations have hidden IPv6 traffic running across their networks, and few network managers are equipped to see, manage or block it. Increasingly, this rogue IPv6 traffic includes attacks such as botnet command and controls.

"If you aren't monitoring your network for IPv6 traffic, the IPv6 pathway can be used as an avenue of attack," says Tim LeMaster, director of systems engineering for Juniper's federal group. "What network managers don't understand is that they can have a user running IPv6 on a host and someone could be sending malicious traffic to that host without them knowing it."

Most U.S. network managers are blind to rogue IPv6 traffic because they don't have IPv6-aware firewalls, intrusion-detection systems (IDS) or network management tools. Also, IPv6 traffic is being tunneled over IPv4 connections and appears to be regular IPv4 packets unless an organization has deployed security mechanisms that can inspect tunneled traffic.

"At least half of U.S. CIOs have IPv6 on their networks that they don't know about, but the hackers do," says Yanick Pouffary, technology

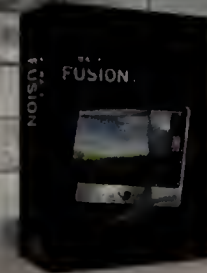
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NETWORKWORLD
CLEAR CHOICE

VIRTUAL DESKTOPS

Best desktop hypervisors

VMware is the winner on Windows; Parallels Desktop is tops for Mac hosts. **PAGE 32**



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Best desktop hypervisors

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GOODBADUGLY

Google offerings shed beta labels

Gmail is out of beta. After five years and plenty of industry snickering and corporate complaining, Google announced Tuesday the online messaging service is now an official "shipping" product. Google Calendar, Google Docs and Google Talk were all stripped of their beta tags as Google upgraded the pieces of its Google Apps Premier Edition (GAPE) suite to the status of a finished product. While Google claims the move is just semantics, it acknowledges that the "beta" tag was making corporate users uneasy and often unwilling to commit.

IT spending continues to sag

Gartner has released updated worldwide IT spending numbers that show the ongoing economic recession and declining revenues across all major segments of IT drove forecasts down 6% in 2009 to a total of \$3.2 trillion. Gartner adjusted its previous 2009 spending forecast downward to a decline of 6%, rather than the 3.8% the research firm estimated in March. The research firm attributes the adjustment to continued weak IT spending and declining revenue across all four major IT segments: hardware, software, IT services and telecommunications. "While the global economic downturn are still being cut and consumers will need a lot more persuading before they can feel confident enough to loosen their purse strings," said Richard Gordon, research vice president and head of global forecasting at Gartner, in a statement.



Social Security numbers are predictable

Social Security numbers may not be as random as believed, as a new study contends that powerful mathematical techniques combined with open-source research can, in some cases, reveal a person's secret number. The study, published in the journal Proceedings of the National Academy of Sciences, serves as a stark warning that SSNs are increasingly vulnerable, putting more people at risk of identity theft. The study comes from Carnegie Mellon University's Alessandro Acquisti, an assistant professor of IT and public policy, and Ralph Gross, a postdoctoral researcher.

Too many apps are malware friendly

Re: The 10 dumbest mistakes network managers make (<http://tinyurl.com/quu4me>):

The key problem with the people factor is poorly written applications that still require the user be logged in as a member of the local machine administrator group for the application to run correctly. Even critical apps published by the Big Guys are written this way. Although not necessarily a problem for the legacy-coded app, running a PC with the user as a member of local admins opens the PC for installation of any sort of potential malware that the user cares to accidentally inflict upon the PC. Sadly, there is far too much of these legacy-coded apps, even in their latest versions, to effectively eliminate this problem.

A common workaround for this is to tell network admins to have users logged in as local machine users, and have users Run As Administrator for those problem apps. Some of those legacy apps will work correctly this way, but many will still refuse. And, providing the administrator logon to allow Run As Administrator functionality for those users who insist upon adding those cutie, malware-laden apps to their PC, is almost as bad as having the PC logged in as an administrator. With the tiniest bit of social engineering flim-flam, one of those clowns will gladly help the malware wranglers set up shop on their PC.

Anon

Keep Google out of driver's seat

Re: Imagine the Googlemobile (<http://tinyurl.com/l38o8y>):

Some people really enjoy driving. I don't want a car driving for me. I don't want to sit on the couch in my ugly-capsule on the way to work.

The only good thing about this is the fact that by 2040 I'll be approaching senility anyway, and can live in my own little fantasy world where garbage like this doesn't exist.

Jops

Take back IPv4 addresses

Internet's biggest issue? IPv6 transition, new ARIN CEO says (<http://tinyurl.com/lo6jrw>):

If ARIN went out and simply demanded that the early IPv4 adopters that are camped on top of class A and multiple class B addresses return what they realistically don't need, the depletion date could easily be extended another several years.

When non-ISP corporate entities are using RFC1918 addresses internally and have limited (and outsource hosted) Web presence and still maintain control over millions of registered IPv4 addresses, ARIN should do something about it.

Anon

Telcos and rural areas don't mix

Re: Broadband subsidy: Too much money, but mostly well targeted (<http://tinyurl.com/ly85m8>):

The telcos and cable companies aren't going to touch a penny of that money. It's a poison pill and they won't be swallowing. Look for the states to use this money in other creative ways that don't provide Internet access.

Why would Comcast and Verizon take money to build infrastructure to rural areas that still won't generate revenue and end up costing them more money in the long run, as well as subject them to 'neutrality' regulations?

There's a reason those areas aren't built out to begin with. They don't generate the revenue necessary to maintain them once built.

There may be a few edge cases where the business model is workable if someone else foots the bill for the initial install, but it's not as many as you think.

The major issue they are facing is that even if a brand-new player took the money and built out a new market, how would they provide access to the Internet as a whole?

They can't connect to a backbone that doesn't support these 'neutrality' rules, and none of them do. It would just be a large LAN segment.

Anon

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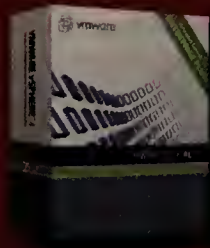
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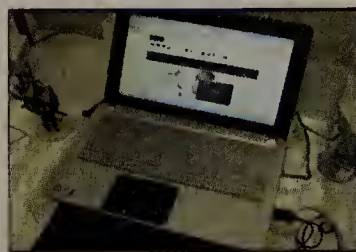
BLOGOSPHERE

■ **Imagine the Googlemobile.** Network World's Google Subnet found out that the firm that designed the G1 phone, Mike and Maaike, have developed a concept electric car. OK, this has nothing to do with Google except in the one degree of separation. It might have more to do with Apple in that the car, dubbed the "atnmbie," looks somewhat like an old-style Macintosh monitor. The designers also envision this car to be "driverless." So, while it is toting you around town, you can chat on your G1 or surf the Web. The car isn't expected to come to life via any particular manufacturer, or perhaps at all, says the earth2tech blog on GigaOM. It is merely a concept offered as an idea for others wanting to design clean-energy transportation for real. <http://tinyurl.com/kwq21s>

■ **Cisco lost market share in network security appliances and software in 1Q09.** Blogger Brad Reese provides further details on why Cisco has lost market share in network security. He quotes Jeff Wilson, network security analyst at Infonetix Research, on the topic: "Cisco is the revenue-leading vendor overall with 38% of total network security appliances and software in 1Q09 (down 2.8 points from 4Q08); Cisco has held this share position since CY02; they've been a strong leader in this market for a long time now, and the main reason for their strength (their ability to sell the total solution and attach security sales to network infrastructure sales) is also the main reason for the huge decrease in their revenue (a 20% drop) in 1Q09; security sales will come back for Cisco (they noted that security attach rates to routers didn't decrease at all, and their content security revenue actually grew in 1Q09); we expect that by between 3Q09 and 4Q09 they'll be back to 4Q08 levels for security revenue. Juniper and Check Point are second and third with 10.4% and 9.5% respectively. Both felt the pinch in 1Q, but neither felt it as bad as Cisco did." <http://tinyurl.com/ng51wx>

■ **Microsoft knew of the IE, zero-day ActiveX hole for months.** Network World's Microsoft Subnet reported that Microsoft last week responded to accusations that it knew about a critical IE ActiveX hole for as long as 18 months. The hole is being actively exploited by hackers. To its credit, Microsoft came clean and admitted it did indeed know since the spring of 2008. To its detriment, what's the point of asking researchers to come to you and report under non-disclosure bugs so you can fix them before the hackers find out if you don't fix them until after the hackers find out? <http://tinyurl.com/ljlrbe>

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IDG News Wire

Sony unveils its first netbook

The Vaio W will push Sony into the only part of the PC market showing growth at present. <http://tinyurl.com/la9kod>



IDG News Wire

China blocks Internet traffic after ethnic riots

The government shut off access last Sunday afternoon to stop the spread of video and information. Twitter was blocked nationwide the next day. <http://tinyurl.com/l9zud6>



IDG News Wire

Panasonic aims a laser at TV recycling

The company's new recycling technology more than doubles the speed with which a cathode ray tube can be cut in half. <http://tinyurl.com/mlt9wg>



Best of NWW's NEWSLETTERS

The notification chain when a breach is suspected

IT BEST PRACTICES: Many IT departments are investing significant time and money on log management or security incident and event management tools. It might be to meet a regulation or mandate — Payment Card Industry standards, for instance — or to better understand what is happening in the computing environment. Such tools enable the administrators to take a lot of disparate bits of event information, correlate them and present them in a way in which it's easy to spot anomalies. What happens when the person monitoring the log management or SIEM dashboard sees something a little out of the ordinary? He drills down for details, of course. But what happens (or should happen) when those details begin to suggest something ominous, such as a data breach or corporate fraud? At this point, a lot of care needs to be taken in how the log data is handled and who must be notified of the situation. How the data is handled could impact whether or not it can later be used as evidence in a criminal or civil charge. Who is notified of the suspected breach and how they contribute to the investigation is another delicate matter. A few weeks ago, we provided best practice tips on preserving log data for a forensic investigation. In this article, we'll

discuss the notification chain and how other experts support the investigation and its fallout. <http://tinyurl.com/l3xwnz>

NETWORK MANAGEMENT: Not all IT organizations respond to a recession in the same way, according to Forrester Research, which conducted a survey that revealed some companies continue to invest in technology to meet business demands. In its June 2009 report "Innovation and Agility — Driving IT Success in Economic Hard Times," Forrester revealed the results of a survey of 46 enterprise IT decision-makers that shows three primary reactions to the recession. While many organizations cut budgets to ride out the economic downturn, Forrester found that not all companies resort to a bunker mentality. "Across all of these companies, traditional approaches to budget cuts abound — like postponing upgrades, terminating long-running projects or reducing travel . . . and entertainment," the report reads. "But some firms aren't hiding out, waiting for the recession to pass. Instead, they are investing in agility to keep their options open, or they are investing in business innovation to help them accelerate out of the recession." <http://tinyurl.com/m8t9e>



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Gartner sees greater drop in IT spending than forecasted

IT spending is expected to decline by 6% this year to \$3.2 trillion worldwide, according to Gartner, which in March had forecast only a 3.8% drop. The continuing recession and exchange rate fluctuations were cited as primary reasons. Hardware will be the hardest hit IT sector, with spending projected to decline 16.3%. But all four major segments of the market — hardware, software, IT services and telecommunications — will be impacted by the slowdown. “While the global economic downturn shows signs of easing, this year IT budgets are still being cut and consumers will need a lot more persuading before they can feel confident enough to loosen their purse strings,” said Richard Gordon, research vice president and head of global forecasting at Gartner. <http://tinyurl.com/naku2s>

Microsoft to release half-dozen security updates. Microsoft last week announced that it will provide six security updates Tuesday, including two for holes that hackers have been using for months to attack Windows and Internet Explorer. Of the six updates previewed in the advance notice, three will affect Windows, and one each will patch problems in Publisher, Internet Security and Acceleration Server and Microsoft’s Virtual PC and Virtual Server software. The Windows updates will be tagged “critical,” Microsoft’s highest threat ranking, while the others will be marked “important,” the next rating down in the company’s four-step scoring system. <http://tinyurl.com/l8kl74>

IT pros continue to lose jobs. As the national unemployment rate continues to creep up, the number of jobs cut in high-tech industries is also increasing across several IT segments tracked by Foote Partners. Recently released Department of Labor statistics show the national unemployment rate is nearing 10% with 467,000 non-farm jobs lost in June. Among the jobs being cut are many in high-tech industries such as communications equipment, which lost 2,100 positions in June after shedding 600 in May. About 1,100 management/technical consulting positions were lost in June, after 700 were added in May and 1,600 in April. Potential signs of a slowdown in job cuts could be found in fewer total positions eliminated, Foote Partners suggests. The computer/peripheral equipment industry lost 2,300 jobs last month, fewer compared with the 3,200 eliminated in May. <http://tinyurl.com/m3a9cp>

EMC scores win against rival NetApp. EMC has scored another victory over storage rival NetApp by purchasing Data Domain, a merger that widens the technological gap between the

companies in the fast-growing data de-duplication market. NetApp desperately wanted Data Domain to bolster its largely unsuccessful de-duplication business, as evidenced by its \$1.9 billion bid to purchase the company. But EMC proved too rich, and last week signed a definitive agreement to buy Data Domain for \$2.1 billion. “This is a move that strengthens EMC and doesn’t put them in any financial or competitive bind,” notes Pund-IT analyst Charles King. “From a competitive standpoint, EMC won the day here.” De-duplication is expected to play a major role in the storage market because it lets companies reduce the amount of disk space they need in their data centers. <http://tinyurl.com/kjwmos>

Ericsson signs deal to run Sprint networks. Sprint and telecom systems provider Ericsson have signed a seven-year deal that will give Ericsson day-to-day responsibilities for managing Sprint’s wireline and wireless networks. Sprint says that while it will retain full ownership and control over its networks, Ericsson will be responsible for the provisioning and maintenance of Sprint’s iDEN, CDMA and wireline networks. Bob Azzi, Sprint’s network senior vice president, said Sprint is choosing to outsource its network operations to redirect resources to other priorities such as enhancing wireless coverage and improving customer service. Sprint says about 6,000 of its employees will be transferred to Ericsson as part of the deal. <http://tinyurl.com/ktcnbz>

IBM security software masks confidential info. IBM researchers said last week they have developed software that uses optical character recognition and screen scraping to identify and cover up confidential data. According to IBM, the driving idea behind the MAGEN (Masking Gateway for Enterprises) system is to prevent data leakage and allow the sharing

of data while safeguarding sensitive business data. MAGEN works at the screen level by ‘catching’ the information before it hits the screen, analyzing the screen content, and then masking those details that need to be hidden from the person logged in. The major novelty lies in architecting a single system that handles a wide range of scenarios in a centralized and unified manner, IBM stated. <http://tinyurl.com/ksd7dx>

Apple’s iPhone App Store hits its first year. Apple’s iPhone App Store celebrated its first full year in business this past weekend having surpassed 1 billion downloads of the more than 55,000 applications. The App Store’s success has led to nearly every maker of a smartphone operating system to mimic the concept of making it easy to purchase and wirelessly download software from a third-party developer. In the past year, Research in Motion, maker of the BlackBerry, Microsoft, maker of the Windows Mobile OS, Google,



backer of the Android mobile platform, and Palm, maker of the Palm Pre and WebOS, have all launched application storefronts. The App Store concept “is the future of the software market,” said Rob Enderle, analyst for the Enderle Group. “It changes the model. We live in an online world and App Store anticipates that we won’t be buying software in a store.” <http://tinyurl.com/mo6yk8>

Oracle halts work on green data center. Oracle recently halted work on a green data center project in a suburb of Salt Lake City, but it is not clear why. The data center in West Jordan, which is supposed to support Oracle’s on-demand division, was announced last year under the name “Project Sequoia.” Various reports have placed the center’s size at 200,000 square feet, with a construction budget of about \$300 million. The project was to make major advancements in power savings, according to a presentation by Oracle CIO Mark Sunday at last year’s LinuxWorld conference. But for now, that vision won’t be realized. Utah expects Oracle will resume the project, but the vendor hasn’t stated a time frame, Sullivan added. <http://tinyurl.com/n23759>

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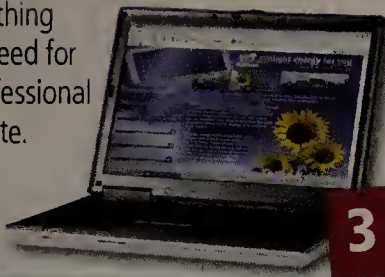
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Heady days for mobile Web apps

BY JOHN COX

Google's announcement of its ambitious Chrome OS has thrown a spotlight on a number of emerging Web technologies that promise to transform mobile application development.

For enterprise IT, the transformation means faster, simpler development of mobile applications that can run inside powerful modern Web browsers, many based on the open source Webkit technology, and mimic many of the characteristics of native applications that are written for and compiled to a specific operating system.

Both Google with Chrome OS and Palm with

its webOS are making use of these same technologies, but doing so outside the browser. Both are using a Linux kernel as the foundation, then marrying it with the latest version of the open source Webkit HTML rendering and JavaScript engine, a kind of "headless" browser. The Webkit engine will act as the execution engine for native applications, accessing device and Linux features as needed, written in JavaScript.

This new breed of mobile Web applications (and Google's major revision of Gmail for mobile earlier this year is a good example) can be stored locally, along with user and other data, so it can run even without an Internet connection. Written in JavaScript, these applications can run as

much as five times faster than just a year ago, due to a new generation of powerful JavaScript engines. They offer a degree of interactivity and richness not possible before. And, at least in theory, such applications could run with any of the modern browsers that also support the latest relevant standards, such as HTML 5 and Cascading Style Sheets (CSS) 3.

They're much more sophisticated than Web widgets, or even the thousands of JavaScript or Zool extensions for Firefox, and simpler to create than browser plugins written in C or C++.

But such mobile applications will also pose the same kind of security challenges as desktop browsers. Performance differences with native

See Mobile, page 18

■ Chrome, from page 1

Google clearly is rushing to get its strategy and services aligned for the next round of battle with the software giant, which has a product pipeline set to gush between now and the end of 2010. The questions, however, are how ready is Google, can it create something compellingly different and innovative, and if it does, what size dent can it make in the Microsoft armor?

The ramp up was slow as the Chrome OS announcement came in a very un-Google-like fashion, arriving without any active code and in the form of blogware.

"With Windows 7 about to ship, it would have been better for Google to release, rather than simply announce, an alternative for the netbook market," wrote Laurent Lachal, open source director at Ovum, in a research note. "Key to Google's OS success will be its ability to create a strong community around it. This is going to be difficult. A rethink of the project based on an alliance/convergence effort with the Ubuntu [Linux] community could help."

The Chrome OS introduction raises more questions than it answers. Google has yet to explain exactly how it will function and why it will be better than current browser access to Web-based applications.

The big challenge will be to prove that the operating system works well enough to trigger significant adoption. IDC forecasts that Microsoft will ship 117 million copies of Windows in 2010 with half being Windows 7.

Chipping at those numbers will be difficult because Google is only targeting the netbook subset of the personal computing market.

Experts say Google must create an exciting rush of innovation comparable to what Apple's iPhone achieved.

"This could be an opportunity to take this stuff in the browser and bring it closer to the desktop environment and make things appear to run natively from the desktop," says Al Gillen,

an analyst with IDC.

Working in Google's favor is that it plans to offer the operating system for free to OEMs that on average pay Microsoft \$40 (consumer) to \$90 (business) for a copy of Windows.

But pricing doesn't discount the task Google will have building a partner network to provide applications, drivers and other peripherals to work with Chrome OS netbooks and eventually the desktop PC version Google plans to offer.

Google is receiving encouragement from open source advocates such as the Linux Foundation and potential rivals such as Red Hat.

"Open source has proven to be a better model of development and the platform of the future. We look forward to seeing how [Google's] project will progress," says Leigh Day, senior director of global corporate communications for Red Hat.

But the support Google needs doesn't center on furthering the cause for Linux and open source.

"The real critical issue for now is not how well can Google create a netbook OS, it is more how can they build out a very robust and interesting partner infrastructure for building applications and tools that PC users depend on every day," says Charles King, principal analyst with Pund-IT. "We have to see some major-league ISVs buy into the Web-delivery apps that Chrome OS devices are built for."

That is another area where Google has a lot of ground to make up on Microsoft, which will welcome more than 7,500 partners to its annual Partner Conference this week.

It is there that Microsoft is expected to unveil pricing for its Azure cloud computing platform and release preview code for its Office Web Apps. The Office Web Apps, slated to ship early next year with Office 2010, are one reason Google last week removed the beta tag from its Google Apps.

"For too many companies looking at commercial Gmail, the beta label was like a blinking neon light that flashed 'amateur, amateur...' "

says Matt Cain, an analyst with Gartner.

Microsoft plans to weave a story of integration between the Web-based Office applications and the traditional desktop version.

The Office Web Apps will provide synchronization of e-mail, calendar and contact items between Web browsers, including Internet Explorer, Firefox and Safari; desktop applications through the Outlook client; and mobile devices from Microsoft, Research in Motion and Apple.

It's a powerful link that could help Microsoft stem any bleeding from its Office install base to Web-based productivity applications Google will offer using Chrome OS as the interface and Google Apps on the backend.

"If you could run [Microsoft] Office on Linux or on a Google operating system, I think the other operating systems would be much more appealing," says Tom Amrhein, CIO at Forrester Construction in Rockville, Md. "The reason Microsoft has a good grasp on the desktop has less to do with the desktop than its complete domination of the office space."

Microsoft will tighten that grip with other innovations that nip at features of Google Voice that have limited integration with Google Apps.

At the Partner Conference it is expected to show Office Web Apps support for voice mail delivery to e-mail in-boxes. Users also will be able to communicate using instant messaging integrated with a user's desktop Outlook address book.

Google is in a position Microsoft has often been caught in when it has shipping and non-shipping products that need to be integrated to support a grand platform vision. Only time will tell if Google can pull it all together.

"We do not expect Google Chrome OS to take over the world — it is a bit late for that," Ovum's Lachal says.

Network World Senior Writer Jon Brodtkin contributed to this report.

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The botnet world is booming

BY ELLEN MESSMER

The thriving world of botnet attacks continues to demand IT's attention. With U.S. and South Korean government Web sites hit by distributed denial-of-service (DoS) attacks last week by a botnet controlled by an unidentified attacker — North Korea is suspected, however — the shadowy world of botnets continues to grow unabated.

According to the ShadowServer Foundation, a group sharing information about botnet activity, the number of identified botnets, which started to take off about half a dozen years ago, has grown from about 1,500 two years ago to 3,500 today.

This latest botnet is believed to be carried out through hidden manipulation of about 50,000 compromised computers using an updated version of an old virus, MyDoom. So far the botnet-directed attacks against the United States and South Korea, have done no lasting harm to the many Web sites struck, although the Federal Trade Commission (FTC) and the Department of Transportation suffered outages and FTC.gov still is struggling, according to Keynote Systems, which measures and monitors Web site use. And the distributed DoS botnet episode is ongoing, with more hits expected on South Korean banks and a newspaper, says South Korean antivirus firm AhnLab, which analyzed malware samples associated with the attacks.

It's not just distributed DoS attacks that are associated with botnets. Botnets are usually specialized, designed for criminal tasks that range from spam distribution; stealing identity credentials such as passwords, bank account data or credit cards and keylogging; click fraud; and warez (stealing intellectual property or obtaining pirated software).

"There's usually a primary purpose to a botnet," says Jose Nazario, manager of security research at Arbor Networks. "There are turf wars out there as criminals are vying for the desktop. They try to kick each other off."

Although botnets come and go, the more successful ones have endured for years as large command-and-control systems operated by shadowy groups that have taken over hundreds of thousands of desktops.

These botnets are bequeathed names by researchers probing them. Gammima (gaming password stealer), Conficker (fake antivirus) and Zeus (information stealer), are among the largest, according to security firm Damballa.

But sizing botnets up in terms of actual numbers of compromised computers under their control as bots (sometimes called "drones") is tough, many experts say.

That's because these numerical counts, typically based on detected numbers of infected

Top 10 spam botnets (June 2009)

Botnet	% of spam	Spam per minute	Estimated botnet size
Cutwail	45.8%	51,469,251	1,400K - 2,100K
Mega-D	9.3%	10,446,954	460K - 700K
Grum	6.0%	6,683,822	600K - 900K
Rustock	4.5%	5,021,937	640K - 960K
Donbot	3.2%	3,576,516	360K - 540K
Bagle	1.7%	1,886,316	300K - 450K
Gheg	1.4%	1,539,356	170K - 250K
Xarvester	0.2%	198,001	30K - 50K
Asprox	0.2%	265,741	11K - 17K
Darkmailer	0.1%	65,246	1K
Unclassified botnets	10.5%	11,814,434	860K - 1300K

SOURCE: SYMANTEC NOTE: THE OTHER 17% OF SPAM COMES FROM DIFFERENT SOURCES.

numbers are influenced up or down by network technologies such as network-address translation. And there's constant change.

The irony of Conficker, which has infected an estimated 1 million to 10 million machines and has made attempts to sell fake antivirus to its victims, is that it remains so quiet.

"It's one of the largest botnets out there but currently it's doing nothing," says Nazario, who believes Conficker has infected about 5 million Windows-based computers.

The easiest type of botnet to count seems to be the spam botnets. According to Symantec's MessageLabs division, the top botnet in June was one called Cutwail, which generated more than 45% of all spam worldwide by controlling about 1.4 million to 2.1 million compromised computers at any time.

But the FTC's shutdown last month of Web hosting firm Pricewert, accused of illegal activities involving botnets and child porn (which Pricewert denies) has disrupted the Cutwail botnet, says Matt Sergeant, chief antispam technologist at MessageLabs.

Cutwail, which exists as two distinct malware versions "is not currently No. 1 anymore," Sergeant says. He predicts that by the end of July, it's likely the No. 2 botnet, Rustock, which had only controlled 4.5% of the world's spam, will jump to about 50% of spam, with Cutwail knocked down, though struggling for a comeback.

The buyers of spam services in the underground economy appear to be switching from Cutwail to Rustock, Sergeant suspects. Both botnets have existed for several years, with their master controllers suspected to be in Ukraine or Russian-speaking countries. Several other

sia in general for all manner of botnets.

Nazario and Sergeant both say prosecuting illegal botnet activity is very difficult across different countries, though they credit the FBI with determined law-enforcement efforts on this front.

One of the most dangerous botnets out there by many accounts is Torpig, which is designed to steal identity credentials, credit cards, bank account and PayPal information, and more.

"It's very sophisticated, hiding on your machine with a rootkit to survive," says Joe Stewart, director of malware research at SecureWorks. "It will silently sit there in the system and grab bank account log-ins and silently send them out of your machine."

Infiltrating the Torpig botnet to find out exactly what it was doing was the mission undertaken earlier this year by eight researchers at the University of California, Santa Barbara, in the Department of Computer Science's security group. It set up a server in an undisclosed location and simply waited for Torpig to find it, based on an analysis of Torpig malware.

"We knew in advance what were the sequence of addresses they would visit so we just waited," says Giovanni Vigna, the UC Santa Barbara computer science professor who teamed with staff and graduate students to bust into Torpig.

Last month they published the eye-popping account of what happened in the 10 days before they were dropped from Torpig, apparently because its operators discovered the infiltration.

The report, "Your Botnet is My Botnet: Analysis of a Botnet Takeover," details how the Torpig botnet made more than 180,000 infections on

See **Botnets**, page 18

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11 IT security companies to watch

Detecting botnets, mobile phone protection, security among focus areas

BY ELLEN MESSMER

In spite of the headwinds from a stormy economy, these start-up companies are down the runway and taking off with innovative products and services for IT security. On their radar can be found a focus on botnet and malware detection as well as mobile and virtualization security.

Damballa

Founded: 2006

Headquarters: Atlanta

Focus: Detection of botnet-infected computers.

Why it's worth watching: With botnets used by criminal organizations to steal sensitive information, there's more incentive than ever to be able to identify infected machines. Damballa's Failsafe gateway appliance, out this year, is designed to spot bot activity on networks.

How company got its start: Its roots have grown from academic research on malware and botnet detection done by Damballa's four founders, Merrick Furst, Wenke Lee, David Dagon and Richard Lipton, all professors at Georgia Institute of Technology.

How company got its name: A voodoo snake god.

CEO: Steven Linowes, formerly in corporate development at Yahoo; also was CEO of Mercatus.

Funding: \$8.5 million from Sigma Partners, others

Who's using the product: About a dozen users, including Procter & Gamble.

Dasient

Founded: 2008

Headquarters: Palo Alto

Focus: Detection and quarantine of malware infections on Web sites.

Why it's worth watching: Millions of Web sites are infected each year because attackers, through various means such as SQL injection attacks, find a way to load malware onto legitimate Web sites, creating attack pages — a problem Dasient believes its Web Anti-Malware service can mitigate effectively.

How company got its name: Co-founders Neil Daswani (formerly security product manager at Google) and Shariq Rizvi (Google software engineer) departed Google last year to found Dasient with Ameet Ranadive, whose background include stints at consultancy McKinsey and HP.

How company got its name: Has no specific meaning "but we will give it meaning," the

co-founders say.

Funding: \$2 million from sources that include Radar Partners, Stratton Sclavos, Maples Investment and Eric Benhamou.

Who's using the product: Several beta customers, including Family Communications.

Delfigo Security

Founded: 2008

Headquarters: Boston



Focus: Fraud detection for Web sites with log-in procedures.

Why it's worth watching: Delfigo's software-as-a-service model delivers a real-time scoring of security risk related to the user's normal Web site authentication procedures in order to validate genuine identity. The Delfigo

analysis includes geo-spatial IP and keyboard language methods.

How company got its start: As a consultant, Ralph Rodriguez got the idea for the fraud-detection system while observing some Department of Defense systems combating fraud issues.

How company got its name: Variation on the Latin word "defigo" to fix firmly, secure.

CEO: Rodriguez, previously senior vice president at the technology practice at research firm Aberdeen Group

Funding: Undisclosed from Stage 1 Ventures.

Who's using the product: Undisclosed

Egress Software Technologies

Founded: 2007

Headquarters: London, with U.S. base in Chicago

Focus: Software-as-a-service encryption

Why it's worth watching: Called "Switch," this SaaS that debuted this spring lets the user, via the Egress client software, apply encryption to data on any media type and authorize intended recipients. The Egress Switch in the cloud maintains an audit trail of the shared information, which signals back the data's status, whether it was decrypted or used, and allowing the data owner to make changes.

How company got its start: Co-founders Tony Pepper (CEO) and Neal Larkin (COO) saw the usefulness in wrapping controls around data being transmitted via a cloud-based service.

How company got its name: Means data that goes out.

CEO: Tony Pepper, formerly executive at Reflex Magnetics, which was acquired by Pointsec, which later became part of Check Point.

Funding: Undisclosed and self-funded.

Who's using the product: Royal Bank of Scotland, Computer Sciences Corp.

FireID

Founded: 2006

Headquarters: Capetown, South Africa

Focus: Mobile phone security

Why it's worth watching: This South African upstart wants to take on giants RSA and VeriSign in one-time crypto-based password generation with FireID software. The product, introduced in January, generates a one-time password on mobile phones.

How company got its start: Co-founders and entrepreneurs Justin Stanford and Eric Zlander believe the work done by CTO Malan Joubert (the third co-founder) on OATH-compliant cryptography for mobile phone security will be in demand as mobile-computing with serious applications takes off.

How company got its name: Burning with ideas, the founders liked the word "fire."

CEO: Jenny Dugmore, formerly regional manager at Sybase.

Funding: Undisclosed

Who's using the product: Sybase in South Africa as well as firms Tsohle, among others.

HyTrust

Founded: 2007

Headquarters: Mountain View, Calif.

Focus: Policy enforcement for VMware security.

Why it's worth watching: Virtualization roll-outs are spurring developments in management and security technologies. HyTrust's offering is a policy-enforcement gateway appliance for VMware.

How company got its start: Two of the co-founders, Eric Chiu and Rena Budko, worked together at Cemaphore Systems, and Budko's prior work experience at VMware convinced her a policy-management engine for VMware would find need among the user base. The other two founders, Boris Strongin and Boris Belov, are software design engineers with experience at various high-tech firms, including Determina, Cisco and Entercept.

How company got its name: High hopes on high trust.

CEO: Chiu

Funding: \$5.5 million from Trident Capital and Epic Ventures.

Who's using the product: Stanford Hospital & Clinics.

InDorse Technologies

Founded: 2006

Headquarters: New York City

Focus: SharePoint security

Why it's worth watching: Microsoft's

See **Security** on page 16



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■ Security from page 14

SharePoint server application is popular, and the InDorse Discover, Tag and Protect toolset released in March adds security controls to monitor, detect and if necessary block the use of data associated with SharePoint, in a manner akin to data-leak prevention and digital-rights management.

How company got its start: Founder Rob Marano credits software development work on tagging he saw at a small company called House of Development in Jeddah, Saudi Arabia, for inspiring the creation of the InDorse Suite.

How company got its name: Play on the word "endorse".

CEO: Marano, formerly founder of Riversoft and Micromuse.

Funding: \$5 million investment from VC Bank, with House of Development as minority investor.

Who's using the product: Undisclosed

SafeMashups

Founded: 2009

Headquarters: San Antonio, Texas

Focus: Tools for establishing trust and security in Web 2.0 applications.

Why it's worth watching: Web mashups largely lack security controls, but the SafeMashups MashSLL Web toolkit could change that. It's basically a protocol for a Web application to talk to another application through a browser to trusted code combined on the fly over the Web in mashups. This system of trust won't just require inventive technology, but broad industry support.

How company got its start: Founder Ravi Ganesan became intrigued by the security issues posed by the mashup, where code is recombined on the fly.

How company got its name: Making mashups safe — or at least safer.

CEO: Ganesan, research professor and crypto expert at the University of Texas and previously founder of TriCipher.

Funding: Backing under the \$3.5 million incubator program at the Institute for Cyber Security at the University of Texas at San Antonio, which draws in student, staff and university facilities as available resources to work on projects.

Who's using the product: Undisclosed

Talis Data Systems

Founded: 2006

Headquarters: San Diego

Focus: Network security for the desktop.

Why it's worth watching: The Datagent 3.5-inch hardware-based security device, integrated into desktop computers, sets control on access to USB ports and allows controlled access to networks based on a wide variety of factors, such as domain separation and time of day.

The U.S. military has set up separate networks, such as NIPRnet and SIPRnet, with differing security classifications, and the Datagent

Malware family	Agents	Last event received at	
Trojan.ZBOT.twx	341	05/30/2009 07:35 PM +0000	Show events
Trojan.Win32.Agent2.hoq	141	05/30/2009 07:35 PM +0000	Show events
Trojan.WSNPoem.Zeus.Zbot	134	05/30/2009 07:35 PM +0000	Show events
RogueAV.Family.1	89	05/30/2009 07:35 PM +0000	Show events
Trojan.BBB.Generic	71	05/30/2009 07:35 PM +0000	Show events
P2P-Worm.Winws.Nugg	65	05/30/2009 07:35 PM +0000	Show events
Trojan-Downloader.Win32.Renos.AQ	45	05/30/2009 07:35 PM +0000	Show events
Trojan.Torpig.Sinowal.mbr	19	05/30/2009 07:35 PM +0000	Show events
Trojan.LdPinch	18	05/30/2009 07:35 PM +0000	Show events
Trojan.ZBOT	17	05/30/2009 07:35 PM +0000	Show events
Generic Downloader.x	13	05/30/2009 07:35 PM +0000	Show events
Suspicious.msm.generic	11	05/30/2009 07:35 PM +0000	Show events
Trojan.Yaludle.SilentBanker.rk	9	05/30/2009 07:35 PM +0000	Show events
Suspicious.msqupx	6	05/30/2009 07:35 PM +0000	Show events

Trusteer's Rapport is typically offered by financial institutions to clients to help detect phishing attacks.

is intended to appeal to that audience, but could find use in commercial business networks, too.

How company got its start: Co-founders Brad Saunders, Matt Castelli and Terence Slyntz have backgrounds with firms providing support for the military, including at Holocom Networks, and they saw the need to make it easier to set up compartmentalized networks.

How company got its name: Sounds like "talisman," an object with magical power to protect.

CEO: Tom Darton is the firm's president; a CEO has not been named.

Funding: Undisclosed amount of private venture capital that includes a 60% equity stake of \$2.3 million from Pilot Power group, a retail electric provider based in San Diego.

Who's using the product: Undisclosed

Trusteer

Founded: 2006

Headquarters: Tel Aviv, Israel; U.S. headquarters in New York City

Focus: Antiphishing software for the desktop.

Why it's worth watching: Primarily intended to be offered by financial services firms to their customers for free, the Web browser plug-in Rapport software released last year is customized to warn banking customers of phishing attempts and protect online financial transactions.

How company got its start: The rise of sophisticated trojans aimed at stealing financial data was a factor in the decision by Mickey Boodaei to develop browser-based protection software specifically for the financial sector.

How company got its name: Connotes trust in online transactions.

CEO: Boodaei, who previously co-founded

Web-application firm Imperva.

Funding: \$10 million from US Venture Partners and private investors, including Check Point and Imperva founder Shlomo Kramer.

Who's using the product: ING Direct, Royal Bank of Scotland, Pennsylvania State Employees Credit Union and about 20 other institutions.

UnboundID

Founded: 2007

Headquarters: Austin, Texas

Focus: Building a highly-scalable, high-performance directory server.

Why it's worth watching: Large-scale identity and personalization services of the future provided over the Internet and wireless networks will need directories of user information that must be fast, reliable and scalable, and UnboundID is targeting this.

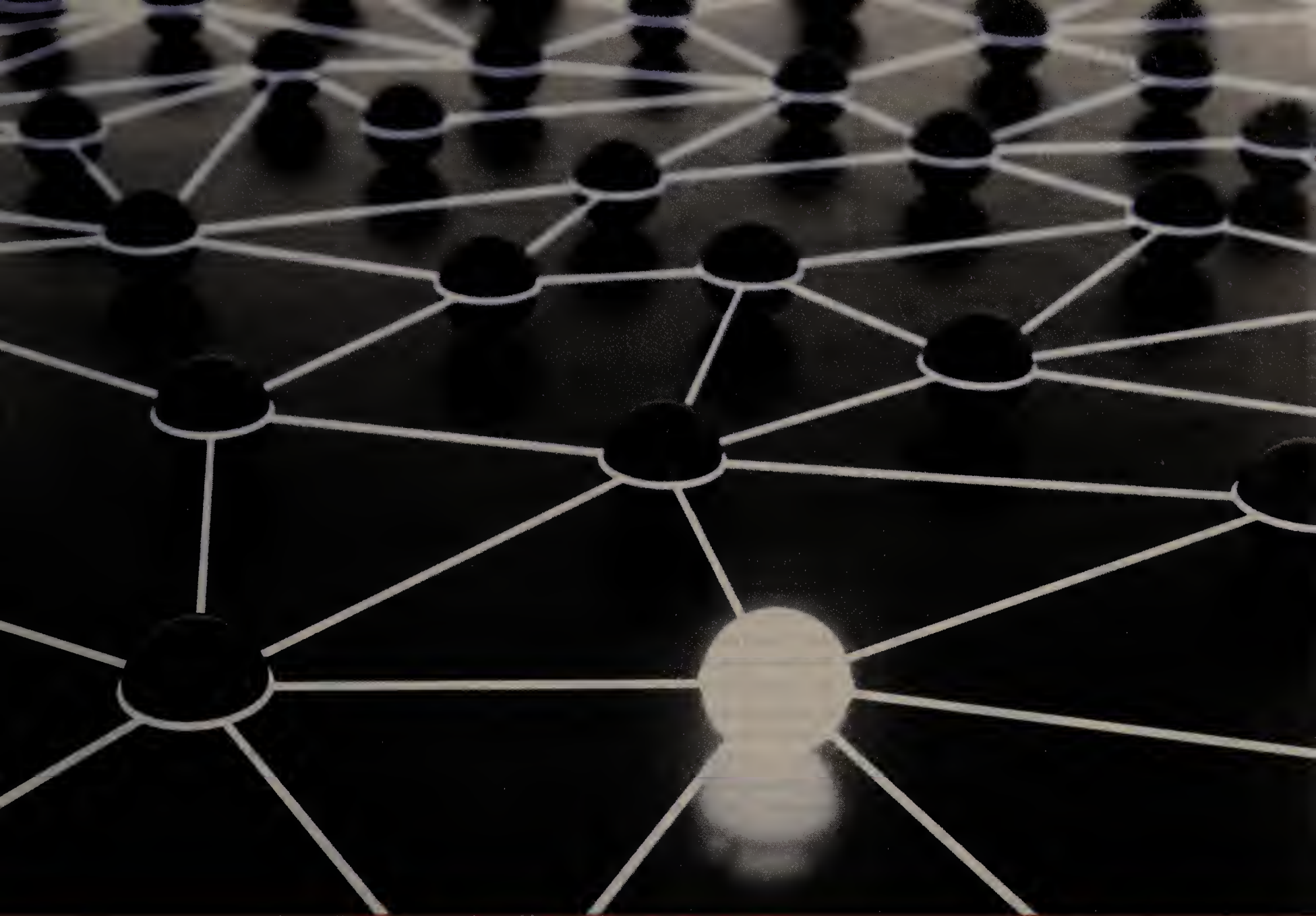
How company got its start: The founders — Steve Shoaff, Don Bowen, David Ely, Neil Wilson and Andy Land — are experts in directory services and identity management who were laid off from Sun and went off to build a directory server that's also part database for high-volume data reads for telecom companies. The UnboundID Directory Server will scale to millions of subscriber entries. Other industries may also benefit down the road.

How company got its name: ID is identity, unbound is no limits.

CEO: Steve Shoaff, formerly technical director and chief of staff of the Identity Management product division at Sun.

Funding: About \$3 million from Silverton Partners.

Who's using the product: Alcatel-Lucent, which is also selling into the telecom market. ■



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■ **Botnets**, from page 12

victims' machines and recorded 70GB of data collected by the bots in just 10 days.

Torpig obtained the credentials of 8,310 accounts at 410 institutions. The top targets were PayPal, Poste Italiane, Capital One, E*Trade and Chase. About 38% of the credentials stolen by Torpig were obtained from the password manager of browsers, rather than by intercepting an actual log-in session, according to the report. Torpig also collected 1,660 unique credit and debit cards, prominently Visa, MasterCard and American Express, with 49% of the victims thought to be in the United States. Torpig in those 10 days was seen to grab 297,962 unique credentials from 52,540 Torpig-infected machines, with the top Web account credentials identified for Google, Facebook, MySpace, netlog.com, libero.IT, Yahoo, nasza-klasa.pl, alice.it, live.com and hi5.com.

The UC Santa Barbara researchers observed traffic that suggested individuals thought infections were cleaned up when they weren't.

The main means of infection with Torpig comes from drive-by downloads from legitimate Web sites that have become compromised with malware by attackers, or occasionally attack sites set up for the purpose.

The effect of the drive-by download is "it modifies your browser so it becomes different," Vigna says. When you next visit your banking Web site, the Torpig-infected desktop displays a fake Web page that tricks the victim into entering his banking password and log-in, for example. Torpig then has it and sends it off to the Torpig operators.

The UC Santa Barbara researchers suspect Torpig is a "malware service" accessible to third parties for a fee.

Vigna says the researchers never discovered who runs Torpig, but did share data with the FBI. UC Santa Barbara was assisted in the Torpig infiltration project by funding from the National Science Foundation, which is supporting a five-year effort to explore the underground economy.

The Torpig botnet suggests a pattern of cooperation between attackers compromising Web sites with malware that directly helps those operating Torpig gain more victims, and it's a trend that likely extends beyond Torpig.

"One of the biggest things we've seen is the dramatic shift to the Web browser," Nazario says about the problem of drive-by downloads. Like other researchers, Nazario says botnets mainly exploit Windows-based machines. "It has become the biggest door into the PC." Users have to stay up to date with patching and benefit from using the latest version of browsers.

While it's Nazario's opinion that "Russians have perfected loaders as a service for spamming malware," he predicts the Chinese have a growing interest in botnets. "The Chinese are where the Russian perpetrators were 10 years ago." ■

■ **Mobile**, from page 10

applications persist. Browser applications typically can't reach outside to access specific device features or operating system services (though even that is in flux). And neither enterprise IT nor enterprise users may be ready to fully depend on their existing cellular or Wi-Fi networks for the essential Internet connectivity that these applications ultimately require.

"If you look at browser innovation over the last 12 months, there's been an unprecedented acceleration," says Matt Waddell, chief of staff, Mobile and Developer Products, Google. One area of innovation is the growing adoption of parts of the HTML5 spec. "[HTML5] represents a brand-new set of browser functionality, to enable an entirely new set of Web applications."

Google has already been making use of two key HTML5 APIs: Database and Application (or "AppCache"). Both were used in the new mobile version of Gmail. Database lets a mobile browser locally store Gmail messages in a local MySQL database; AppCache lets it locally store the Gmail functions and user interface in JavaScript and CSS files.

Mobile users now are able to work offline with and manage their Gmail account, says Alex Nicolao, engineering manager, Gmail for Mobile, at Google. And developers can design and build "bigger" browser applications, with more functions and features, because they don't have to be so concerned about network-determined "wait times," he says. Once the application and data is downloaded to the browser, where it executes, it's no longer waiting on cloud-based services mediated by low-bandwidth links.

"Now you can do the same kind of heavy lifting with large amounts of data on the client side," says Mike Smith, staff representative for the Worldwide Web Consortium (W3C) to the W3C HTML Working Group, which is drafting the HTML 5 specification. Previously, he says, the only way to keep session data or state information locally was through cookies. With AppCache and Database, "you don't have to be doing expensive requests over the net to get data, once it's cached on the device," he says.

CSS3 promises to make browser-based application UIs far more like the richly interactive native applications. "CSS3 gives the developer far greater control over styling the user interface," says Ryan Seddon, senior front end Web developer with DTDigital, a Web design firm. Seddon has his own Web site: The CSS Ninja.

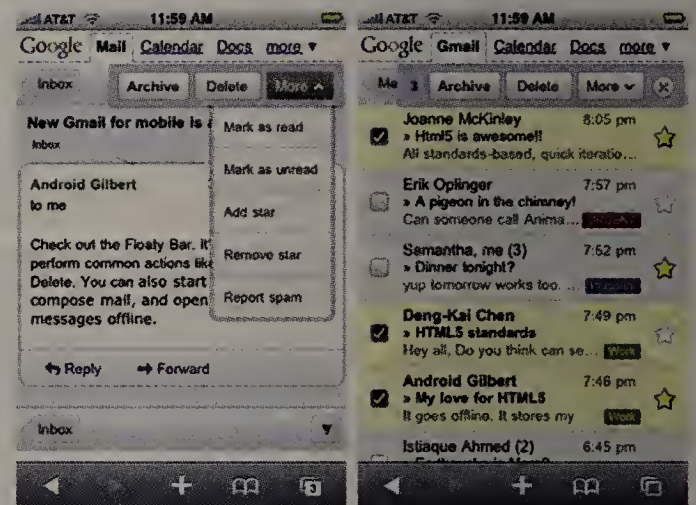
"With CSS3, you can create effects that would usually [otherwise] require a mixture of CSS, JavaScript and images, essentially reducing [page] load times and increasing the overall 'snappiness' of the Web app," Seddon explains.

But there are tradeoffs with the new generation of browser applications. Because JavaScript is not compiled for a given operating system, "you lose a lot a level of [application] optimization for the underlying platform," says Dan

Sharoni, emerging mobility lead with Accenture Technology Labs.

"It's not a 'mobile phone' anymore: it's a computing platform," he says. "So it's very important to give developers access to those features so they can take advantage of them." One possible solution, he says, is for device makers to create and publish new JavaScript APIs or other programs specifically for this purpose.

Enterprise developers need to be aware of limitations still inherent in mobile browsers, says Samir Karande, head of mobile vertical at Persistent Systems, a global outsourced software development firm in Pune, India, with a decade of work in mobile applications. "If I want to place an e-commerce app on a mobile device, it may not be possible with just a browser app,"



Revised Gmail for Mobile, for iPhone and Android browsers, uses emerging standards such as HTML5 and Cascading Style Sheets.

he says. "Because I need personal information stored on the device, more than just a username and password stored in a cookie."

One of the big promises of the new generation of mobile browser applications is that they can be written once and then deployed easily by any compatible browser. But in practice things are not yet that simple, Karande says. "A browser might support HTML5, but not completely," he says. "If you have CSS and JavaScript, most likely every mobile operating system will present it differently."

Infinity Software offers a range of calculation programs for PCs and mobile platforms, including the iPhone, Windows Mobile and BlackBerry operating system. A Web browser development model would simplify development and deployment and cut costs, says CEO Elia Freedman, who started the company as a college senior 12 years ago, writing software for the PalmOS. But he's not doing it for two reasons.

"But I talked to my customers and they are not comfortable with [relying on] the Internet connections for their mobile devices," he says. "Having a Web-only app is a major problem because customers can't assume the network connection will be there, or be fast enough."

Secondly, FastFigure incorporates a powerful calculation engine written in C (another version is in Java) for optimal performance, and far beyond what JavaScript can handle. ■

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With "service oriented" software, companies can unlock business services from the underlying technology so their software can be changed and reused flexibly—at a fraction of the cost of developing it from scratch.

Energy-efficient and virtualized servers and storage can help companies reinvent their datacenters, eliminating up to 70% of their servers and 80% of their floor space.

Service management solutions can orchestrate all of these systems from one place, while letting IT users serve themselves, cutting administrative costs.

Business intelligence is breaking down disconnected silos of information and offering a broader, more holistic view of the information that matters to the enterprise.

All of these developments are converging in a new computing model, cloud computing, which looks at IT as a distributed capability that can be tapped into simply and easily.

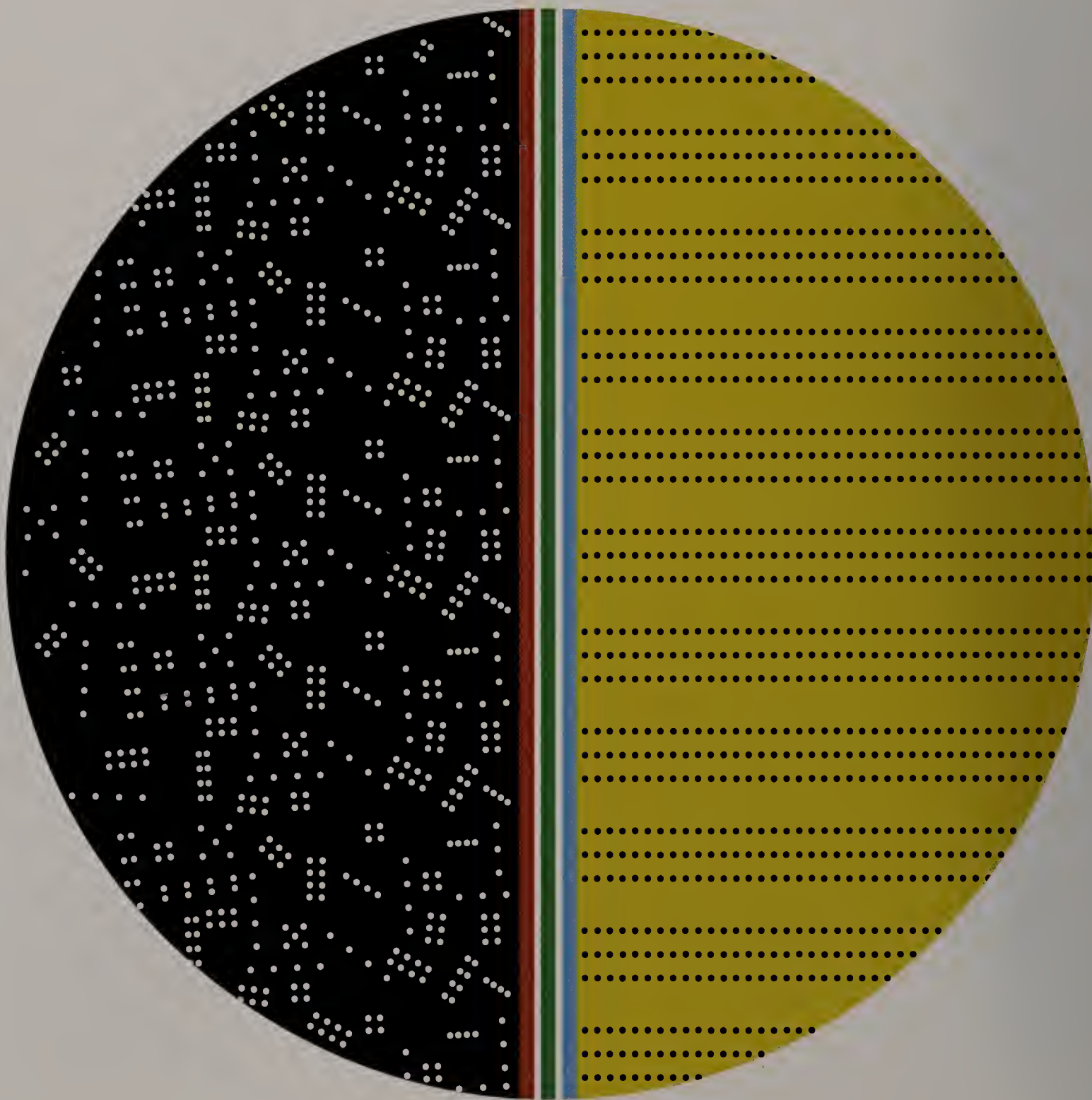
Information technology has taken us a long way in the past 50 years. But seizing the opportunities before us and solving the biggest problems will depend on more than intelligent machines. It will depend on spreading intelligence across our technology infrastructures.



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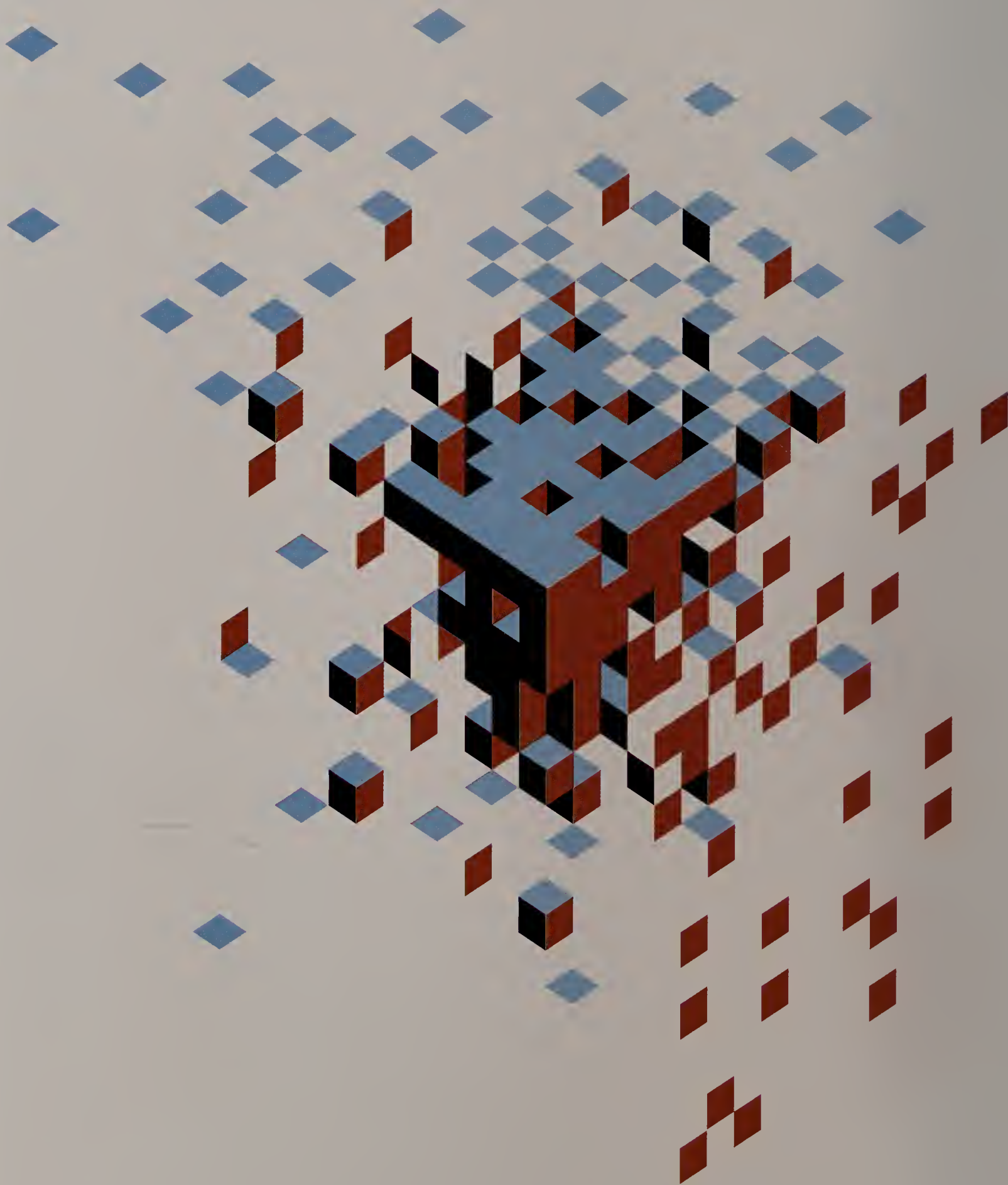
A smarter approach to infrastructure.

The datacenter used to equal IT and nothing more. But on a smarter planet, intelligent devices connected to powerful service management systems are redefining the role of the infrastructure at the core of the enterprise. The datacenter is becoming the nervous system of the entire business—the center of a more dynamic infrastructure that can sense and respond to change—whether it's assembly lines that understand how to adjust to changing needs or power grids that match supply and demand. IBM has already helped customers achieve this vision—by improving service, increasing flexibility and reducing operating costs by as much as 50%.



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Let's build a smarter planet.



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NETINSIDER BY SCOTT BRADNER

Broadband subsidy: Mostly well targeted

has now released documentation on that part of the package, and so far things look mostly OK.

The government has set up a Web site that is designed to let organizations, including states, apply for funding to support broadband deployment. And there is money to be had. The stimulus bill allocated \$7.2 billion and directed the departments of Agriculture and Commerce to hand it out. (Your tax dollars, or maybe your grandchild's tax dollars, at work.)

The Broadband Initiatives Program (BIP) is run by the Department of Agriculture's Rural Utilities Service and the Broadband Technology Opportunities Program (BTOP) is run by the Department of Commerce's National Telecommunications Information Administration (NTIA). The Web site includes Notices of Funds Availability (a term that only Washington could have come up with) for these programs. According to the Web site the BIP will make loans and grants for broadband infrastructure projects in rural areas, and the BTOP will provide grants to fund broadband infrastructure, public computer centers and sustainable broadband adoption projects. There is also a separate document to be used by states that want to get some of the money.

These programs require that the money go to Internet connections that meet the FCC policy statement on network neutrality and do not favor any lawful Internet applications and content over others (see, for example, lines 615 to 629 of the non-state program).

The program does not prohibit all types of invasive behavior on the part of the service provider but the provider is required to "describe any business practices or technical mechanisms they employ, other than standard

best efforts Internet delivery, to allocate capacity; differentiate among applications, providers or sources; limit usage; and manage illegal or harmful content." I guess it's OK for a provider to do bad things as long as they tell us that is what they are doing.

Of course, the provider must support wiretapping and can make use of "reasonable network management."

There are a few things that are not quite what I would have done if I had been in charge. One big problem is that the programs only talk about "advertised speed" of the connection to the Internet rather than what speed a user could reasonably expect to see. It does not take too much imagination to see how that can be (will be?) abused. The minimum speed that is specified (768Kbps downstream and 200Kbps upstream) is also very low in comparison to what is offered elsewhere in the world.

Another problem is that our tax dollars can be used to create non-Internet managed services (lines 634 to 637) as long as some Internet connectivity is also provided. This is just what I was arguing against in a previous column — my tax dollars should not be used to subsidize carriers creating non-Internet services. At first blush, one might think that separate networks for public safety would be a good idea, but in reality, all that such networks do is create incompatible islands of connectivity. It would be far better if public safety communications were IP- and Internet-based.

Disclaimer: A primary aim of education at a place like Harvard is to bridge the incompatible islands of knowledge students have or acquire. But the university has not provided me with an opinion on the broadband stimulus program, so the above is my own review.

Bradner is Harvard University's technology security officer. He can be reached at sob@sobco.com.



EYEONTHECARRIERS BY JOHNA TILL JOHNSON

When private and business data collide

I OFTEN ADVISE IT professionals of the need to step up to working with their companies as strategic advisers around technology-related issues.

This means helping business folk understand the strategic and practical implications of new technologies — and recommending policies that make sense in light of what technology makes possible.

That's particularly true when it comes to technologies such as social networking and communications. Together with the ongoing blurring of personal-professional boundaries, these technologies can raise interesting challenges for corporate policies.

Here's an example: What rights, if any, does a company have over employee identities? I'm talking about things such as personal photographs online at social networking sites, and geographic whereabouts as revealed by cell phone and online mapping databases.

Is it acceptable for a human resources department, for example, to check to see if an employee with alcohol issues frequented a bar over the weekend? (Read on for why this is a harder question than it seems.)

Or take the case of a man I met recently, who worked for a U.S. government agency that oversees procurement and regulation in a particular area. (This is not an agency that's involved in homeland defense, or espionage, or anything overtly "sensitive.")

The agency explicitly forbade him from launching a Facebook page, or posting photos of himself, or any identifying details of his family, including whereabouts, online anywhere — even if the photos were purely private and had nothing to do with his official duties.

The reason? Folks under his agency's regulation, or who hoped to sell to his agency, might see the photos, figure out where he lived, engineer a chance meeting — in line at a local Starbucks, for example — and thereby

manage to gain influence for their organizations. Because the agency was required to be strictly neutral, in-person meetings (however unofficial) would be perceived as favoring one organization over another.

The key point is that there were no overarching issues of national security at stake — the agency required employees to give up certain rights simply to ensure it could do its job more effectively.

Or take the issue of location-tracking, which I highlighted above. As most techies know, cell phone companies can provide up-to-the-minute information about a customer's physical whereabouts. The same is true for certain online applications, such as Google's Latitude, which tracks location via GPS.

If the employer provides the phone — or mobile application — to that person, what right does it have to that information?

That's a question nobody seems to be addressing at present — and that IT professionals would do well to raise with their organizations' legal teams. It's even unclear under which circumstances this information must be provided to state, local and federal governments. The Electronic Frontier Foundation and the American Civil Liberties Union have filed a lawsuit against the Justice Department aimed (in part) at forcing clarification of these issues.

The bottom line? Social networking and communications technologies generate a host of ethical dilemmas — and IT folks need to be ahead of the curve when it comes to advising their organizations about the policy challenges they pose.

Johnson is president and senior founding partner at Nemertes Research, an independent technology research firm. She can be reached at johna@nemertes.com.

Capacity planning for Exchange

BY LEE DUMAS

Microsoft Exchange e-mail systems have emerged as the de facto communication and collaboration tool for today's organizations. However, keeping Exchange running smoothly can be a headache, especially when capacity needs and performance requirements conflict. Here are five capacity planning best practices for optimizing the performance of your Exchange infrastructure.

Database and storage sizing: It is critical to start with an assessment of whether you have enough space to store all the data. If a database logical number unit (LUN) runs out of space, the connected databases will "dismount". Generally speaking, running out of disk space will result in an e-mail service interruption that exceeds most organizations' recovery time objectives.

Next, limit the amount of data users are allowed to store in their mailboxes. This helps to determine how many users each server can support. As users approach their mailbox quota, an equivalent amount of mail must be deleted. This forces growth to be split between the database dumpster and the mailbox.

Another important consideration is controlling database whitespace. Having 50% or more of whitespace will significantly slow performance, but it's not a problem when users are not near their mailbox quotas. To keep whitespace from growing beyond appropriate limits, online maintenance must be able to complete a full pass at least once per week. To accomplish this, enough time must be allocated to enable online maintenance to run nightly.

While smaller databases are quicker to back up and restore than large databases, you can minimize the complexity of the latter by limiting the number of databases and LUNs to manage. Exchange 2007 can support a maximum of 50 databases per server, and Microsoft recommends 200GB for each database. However, since 200GB databases can be unwieldy and difficult to manage, using 100GB databases with continuous replication is a better option.

Planning for backup and restore: To limit data loss, it is best to perform a full online backup every day. With Exchange 2007, administrators can perform a streaming online backup to a disk or use the Volume ShadowCopy Service. Because streaming online backup requires high throughput to copy data to/from LUNs, it often requires very fast hardware to complete a backup within a few hours. So while streaming backup is feasible, using the Volume ShadowCopy Service (VSS) for backing up Exchange is more practical.

The VSS is used by Exchange 2007 to make

volume shadow copies of databases and transaction log files. It can take snapshots of either the production copy or the passive copy. Taking VSS snapshots of the passive copy minimizes the load on the production LUN during checksum integrity as well as the subsequent copying to tape or to disk. This frees up time on the production LUNs to run online maintenance.

Microsoft System Center Data Protection Manager (DPM) is an alternative backup solution that works well with Exchange 2007. DPM can either save a VSS copy of data immediately, or manually copy data to DPM volumes. Once DPM has synchronized the entire Exchange database and transaction logs, it can make an "Express Full" backup that updates only the changes. This results in a much faster backup that is as reliable as a classic full backup.

Capacity planning for mobile devices: While mobile devices improve user productivity they present a challenge to capacity planners because of their resource requirements. For example, an average Research in Motion BlackBerry Exchange user requires nearly four times the server performance as an ordinary Exchange mailbox user.

Mobile devices also introduce a data control issue: you must know where all Exchange Personal Store files are located for your entire organization, know who regularly stores PSTs, and have a plan to control PST usage. The best approach is to implement a PST control policy to document where these files are stored. This should be addressed in the planning phase, because uncontrolled content could create a problem in the event of legal discovery or other proceedings.

Business continuity and disaster-recovery planning: To implement a business continuity solution for Exchange it's best to work backwards. First, establish your service-level agreement (SLA) and determine how long your organization can function without access to e-mail data. Next, calculate how quickly you can restore from your chosen backup solution (disk or tape), and design your solution around these variables. Don't make the mistake of basing your business continuity assumptions on disk size instead of the organization's disaster-recovery needs.

When making disaster-recovery planning decisions, figure out the Recovery Time Objective (RTO) — that is, how long the business can function without access to data in case of disaster. Also, determine how much of the overall messaging solution might be negatively impacted by data loss, and conversely, how much of the messaging project budget can be dedicated to business continuity. This will help determine RTO, which normally spans one to 12 hours. As expected, solutions with shorter

RTOs cost significantly more than those with longer RTOs.

Test the solution by running a fire drill a few times each year by replicating the restore process to make sure it works properly and quickly enough. Assess whether the solution can meet the SLA time requirements of X hours, document the results, and outline the steps required for a real-life disaster-recovery operation.

Compliance: archiving and journaling: There are three core purposes for archiving: storage cost reduction, compliance and the creation of a bottomless in-box experience for the user. A well-architected archiving policy can save thousands of dollars in storage and licensing costs. For compliance, this can be a high-impact feature for Exchange in order to adhere to corporate and regulatory policies. It is critical to understand exactly which regulations apply to e-mail within the organization, because proper storage management (archiving, backup and journaling) can save time and legal costs. While the bottomless in-box feature is nice to have from a user perspective, it has little impact on business functionality.

Archive solutions — those that replace archived content with a stub reference that has a reduced impact on performance — can help when used with proper planning and design. While there have historically been problems associated with archiving large-count mailboxes in Outlook, Outlook 2007 SP2 has adequately addressed these problems. Archiving in Exchange is often as simple as enabling message or envelope journaling, and then periodically moving the journaling mailbox to an offline archive. Once the required retention period has elapsed, purge the content to limit the strain on your resources.

Careful planning of the Exchange server environment will always pay valuable dividends, particularly with regard to archiving and journaling. Using these five best practices for Exchange will help maintain a balance between the user experience, budget and legal/compliance requirements within an organization, while significantly reducing e-mail service interruptions. ★

Dumas is director of architecture for Azaleos, a provider of remote management services for Exchange, SharePoint and BlackBerry Enterprise Server.

This vendor-written tech primer has been edited by *Network World* to eliminate product promotion, but readers should note it will likely favor the submitter's approach.

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GEARHEAD BY MARK GIBBS

Automating anything (on Windows), anywhere

AUTOMATION IN IT will always be a big deal because there's always going to be that situation where you have to do something obnoxiously repetitive such as grab data from that Web page, save it into this file, load that file into this application, format the data this way and e-mail it out to a list of people and do that entire process every hour during the day.

There's another benefit to automation that is often overlooked: accuracy. It would be pretty much guaranteed that a person trying to do that eight times per day, five days per week, 50 weeks per year would make mistakes. And that's the thing; mistakes cost money so automation not only reduces or eliminates manpower costs, it saves the cost of ****ups.

Which brings me to today's topic: Automation Anywhere Server (AAS) from Tethys Solutions, an excellent product for automating just about anything under Windows (Windows XP, Vista, 2008, 2003 and 2000 are supported) on your network.

With the ability to create tasks that perform pretty much any automation process you can think of interaction involves Web browsers and applications on Windows, optionally generate a distributable Windows executable to run the task, a centralized server component, clients that can work either connected and unconnected to the server, system-wide activity logging, and built-in return on investment (ROI) tracking, Automation Anywhere Server is a full-fledged, enterprise-oriented solution to automation.

I was very impressed with AAS 6.0.3 (priced at \$6,000). Among its huge feature list AAS can send and receive e-mail, run tasks on schedules or launched via events or "triggers", run and track the use of VBS and JavaScript scripts, and attempt to resolve platform differences with SMART technology so that tasks execute correctly on different Windows

versions and different individual PCs.

This SMART technology appears to mostly work, though a file creation operation that worked fine on Windows 2008 Server failed on Windows Vista Ultimate because of Vista's enhanced security.

To create an automation task there's the Web Recorder, which monitors your browser's interactions with a Web site and creates a task that can be edited and run. The only situation where this recording technology doesn't work is when a Web page contains ActiveX controls. Then you have to manually add to the script specific mouse actions.

A future release will include detection of interactions with ActiveX controls and will automatically add the mouse actions to your task. You can also create tasks using the Object Recorder, which understands the broader range of Windows controls. This lets you create tasks that will automate any application.

An interesting feature of the task editor is the ability to record thumbnails of browser and application screens when a task is run, which provides a visual record that makes modifying a task weeks or months later somewhat easier.

AAS's ROI tracking examines a range of factors including task development and debug time, documentation time, training, and the execution times of tasks allowing AAS to report on what the tasks would have cost if humans had done them.

There are a few aspects of AAS that could do with enhancement. For example, a more granular user rights system would be useful as would expanded documentation. What AAS excels at is the breadth and depth of its features along with excellent support. I'll give Tethys' AAS a rating of 4.5 out of 5.

Gibbs can be reached at gearhead@gibbs.com.



COOLTOOLS BY KEITH SHAW

Hate the iPod? Try a Zune, or SlotRadio

IF YOU OWN an iPod and love it, stop reading.

But if you're still in the market for a digital audio player, I've got two other options that present digital music offerings differently than the Apple/iPod/iTunes ecosystem.

The scoop: Zune 8, by Microsoft, about \$140.

What it is: Comparable to the Apple Nano players, the Zune 8 offers 8GB of storage space, which Microsoft says can store as many as 2,000 songs, 25,000 pictures or 24 hours of videos (Zune players also come in 4GB, 16GB, 80GB and 120GB versions). In addition, the device features a built-in FM radio tuner and Wi-Fi for connecting to the Zune Marketplace, for streaming music directly to the device (with a Zune Pass subscription). The device offers a 1.8-inch color screen for viewing videos and photos, and three buttons allow for most of the navigation (play/pause, back and "enter" for selecting, moving up/down and volume control).

Why it's different from an iPod: For \$14.99 per month, you get unlimited access to more than 4 million songs. Songs can be downloaded to the Zune software on a PC, and instantly synchronized with the Zune player.

I've been hesitant on music subscription services, as I don't like the idea of a recurring subscription in order to listen to music — I'd rather just buy the CD, and then I have the "rights" to that music forever. But for other people who might not have a huge music collection, this may make sense. In testing (you can get a free 14-day trial of the service), I found myself downloading

more music that I would have never purchased, letting me experience more music than I do on my iPod. For the music lover who wants to experience more music than ever, a subscription makes sense.

Some caveats: Transferring an existing music library to the device is a pain if your music collection is larger than the capacity of the device (in my case, it was).

Grade: ★★★★★ (out of five).

The scoop: SlotRadio Player, by SanDisk, about \$100.

What it is: A digital audio player that requires no downloads, CD burning or subscriptions. Instead, you purchase slotRadio cards (microSD), which include preloaded songs in a variety of categories. The unit comes with 1,000 songs in seven categories: alternative, R&B/hip-hop, rock, contemporary, country, workout and chill-out playlists. The device also includes a built-in FM Radio. Additional cards with 1,000 more songs (including oldies, '80s & '90s and so on) can be bought for \$40.

Why it's different from an iPod: I have a neighbor who abhors the thought of converting her CD collection onto a digital audio player, and instead wants to just listen to music. The slotRadio offers as many as 1,000 songs, and additional cards can be purchased in other categories.

Some caveats: There are some limits. Songs can't be rewound, and the playlists can't be rearranged. You can, however, skip a song. You can't copy the songs to a PC. But the person who gets one of these won't want those features anyway — remember, they just want to listen to music.

Grade: ★★★★★

Shaw can be reached at kshaw@nww.com.



Zune 8 features a built-in FM radio tuner.

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Best desktop hypervisors

Parallels Desktop for the Mac and VMware Fusion for Windows

BY TOM HENDERSON AND BRENDAN ALLEN

Desktop hypervisors offer companies a way to run multiple operating systems, and the applications tied to them, on a single client machine. Common use cases would be support staff, help desk and software development in a multi-operating system environment, or users with a specific business requirement to run a foreign operating system application.

We tested desktop hypervisors from Parallels, VMware, Oracle/Sun and Microsoft on both Windows and Mac hosts. Our guest operating systems were Ubuntu Desktop 8.10 and Windows XP SP3.

Parallels won our overall performance tests on both Mac and Windows platforms. And Parallels Desktop is our Clear Choice Test winner for Mac desktop virtualization. However, Parallels Workstation for Windows is a

less evolved product, particularly when it comes to application sharing and guest virtual machine (VM) integration.

VMware's products are strong on both platforms. VMware Fusion (Mac) came in second by a whisker to Parallels, and VMware Workstation wins our Clear Choice Test for best desktop hypervisor for Windows machines.

Oracle/Sun's open source VirtualBox had decent performance numbers, but is more limited in its application execution capabilities between host and guest VMs, and is more difficult to use overall.

Microsoft's VirtualPC for Mac is no longer supported so we didn't test it. VirtualPC is destined to be the hypervisor that will enable Windows 7 to support Windows XP guests, but Microsoft doesn't seem interested in

NETRESULTS

Product	Parallels Desktop 4.0.3844 for Mac	Parallels Workstation 2.2 for Windows	VMware Fusion 2.0.4 for Mac	VMware Workstation 6.5 for Windows	VirtualBox 2.2 for Mac
Vendor	Parallels Computing www.parallels.com	Parallels Computing www.parallels.com	VMware www.vmware.com	VMware www.vmware.com	Oracle/Sun www.sun.com/software/products/virtualbox/get.jsp
Price	\$80	\$50	\$80	\$189	Free download.
Pros	Excellent guest operating system/application integration; great performance, many features.	Good performance.	Well integrated with OS, full screen multiple-monitor capabilities, good performance.	Best integration, full featured, fast.	Reasonable performer, free iSCSI support for virtual hard disks.
Cons	Controlled features sometimes obscure.	A shadow of Parallels Mac version; lacks competitive features.	Some features not easy to get at.	Dual display not easy to use.	Weak integration with host operating system and hardware, buggy.
Score	4.4	2.9	4.4	4.1	3

SCORECARD

Product		Parallels Desktop 4.0.3844 for Mac	VMware Fusion 2.0.4 for Mac	VMware Workstation 6.5 for Windows	VirtualBox 2.2 for Mac
Action	Weight				
Application sharing	25%	4.5	4.5	4	2
Guest VM integration	25%	4.5	4.5	4	2.5
Hardware integration	25%	4.25	4.5	4.5	3.5
Performance	25%	4.5	4	4	4
Total score		4.44	4.4	4.1	3

SCORING KEY: 5: EXCEPTIONAL; 4: VERY GOOD; 3: AVERAGE; 2: BELOW AVERAGE; 1: SUBPAR OR NOT AVAILABLE

CLEAR CHOICE TEST

VIRTUAL DESKTOPS

supporting non-Microsoft guests on Windows machines.

Installation

We installed a desktop virtualization application on the host operating system, and then installed a legally licensed copy of either Windows XP or Ubuntu Desktop. For convenience, you can use a disk image file (we did) or a vendor's CD/DVD of the operating system.

Some of the desktop hypervisor products "recognized" that the guest to be installed was Windows XP or Ubuntu and made automatic adjustments to accommodate various features between host and guest VM. This allowed us to make rapid default choices, such as how the guest operating system's disk storage would be made (and/or emulated), and how the native and guest operating systems might interact.

These interactions might be something as simple as shared folders among native and guest operating systems, or as sophisticated as being able to present applications as though they were "native" (while actually resident on the 'other' operating system).

To match our business cases, we tested each hypervisor with Microsoft Windows XP (32-bit) because of its popularity with Mac users. We also

tested with Ubuntu Linux 8.10 (32-bit and 64-bit) to check support for Linux in general and to also have a 64-bit test to add to the mix.

We tested each hypervisor to compare features such as mirrored host/guest folders, application sharing, seamless presentation of guest/host applications and importing VMs from other hypervisors.

We discovered that the installation of each of the hypervisors was simple, and options for subsequent use plentiful.

VMware Fusion and Parallels Desktop include some extra applications to work with Windows XP or Vista VMs, and each include optional anti-virus software (McAfee VirusScan Plus for Fusion and Parallels Internet Security powered Kaspersky for Parallels).

The security tools provided by Parallels also include a firewall and spam filter. Parallels also includes licenses for Acronis True Image Home and Disk Director Suite to help with backups and Windows optimizations, but are a separate download. These tools and extras weren't tested.

Gauging performance

We tested performance using two Java-based benchmarks. SPEC's SPECjbb2005 is a business-based benchmark that emulates a warehouse tracking application, uses no network I/O and little disk I/O. Instead, it's a better gauge of memory allocation, task forking and CPU muscle that's not affected by external (to the system under test) I/O.

The second benchmark used was SPECjvm2008, which touches numerous elements of performance and can be considered a better way of comparing desktop rather than server functionality through a series of discrete benchmarks that are run consecutively. We used three of the suite's benchmarks: crypto, mpegaudio and xml.

The results showed that when Ubuntu Linux was the guest operating system, VMware Fusion beat Parallels. But Parallels returned the favor when Windows XP was the guest. The results were close, and VirtualBox also did well.

Overall, Parallels Desktop was the performance winner, followed closely by VMware Fusion and VirtualBox. These results are based on the default settings, and it's possible to increase performance in any number of ways, which we didn't do.

Conclusion

Mac users were the first to express a strong need to use Windows applications, and this early demand is reflected in the fact that the Mac-based desktop hypervisors are generally more mature than those for Microsoft's Windows XP.

VMware is the most consistent and feature-filled product on both Mac and Windows host platforms. Parallels was tops on Macs and an excellent performer. We can't recommend VirtualBox to the average user, and we can't recommend VirtualPC unless your installations will be homogeneously Microsoft Windows-based.

Henderson and Allen are researchers for ExtremeLabs in Indianapolis. Contact them at kitchen-sink@extremelabs.com.

VirtualBox 2.2 for Windows	VirtualPC 7.0
Oracle/Sun www.sun.com/software/products/virtualbox/get.jsp	Microsoft www.microsoft.com/virtualization
Free download.	Free download.
Free, iSCSI support for virtual hard disks.	Good Windows guest integration.
Flaky USB support.	Strictly Windows-focused; lacks many pieces of hardware integration.
2.9	1.9

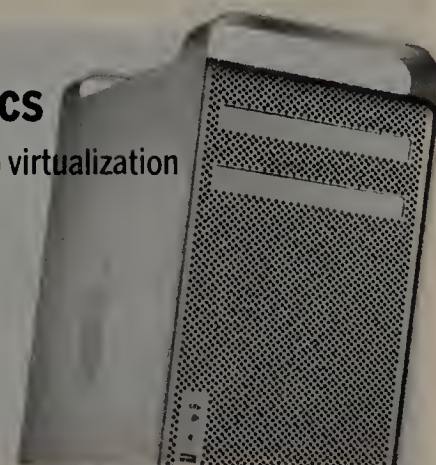
Parallels Workstation 2.2 for Windows	VirtualBox 2.2 for Windows	VirtualPC 7.0
2	2	1
2.5	2.5	2.5
3	3.5	1.5
4	3.5	2.5
2.9	2.9	1.9

Don't forget the Macs

Go online for reviews of desktop virtualization tools for the Mac platform:

- Parallels Desktop 4.0
- VMware Fusion 2.0.4
- Virtual Box 2.2.2

<http://tinyurl.com/mx2k4h>



Parallels Workstation 2.2 for Windows

A less mature version of Parallels' Mac-based virtualization tool

Parallels Workstation for Windows is a lesser product than Parallels on Mac. It lacks support for 64-bit guests, including 64-bit Windows XP or Vista. There is none of the handy snapshot support offered in the Mac, and only one virtual CPU is offered. Because of this, we were only able to test Windows 32-bit and not Vista 64-bit. PW 2.2 also lacks tools (integration support) for Ubuntu, although other guests are supported.

Networking support is offered via either bridged networking to existing Windows drivers (some call this 'shim' support) or independent host-only networking via its own Parallels network driver. Other support, including USB 1.1 support for various devices. A limitation on USB 2.0+ devices caused some problems, however.

Unfortunately, there are no desktop/application integration modes available. Guest VMs are largely autonomous from their hosts, except when the guest can launch an application from folder sharing — a decided disadvantage, and one that makes it tougher for the average user to deploy for everyday guest application/operating systems integration.

Installation of guest operating systems offered us limited choices. For example, when installing guest VMs, the default RAM offered was a bit low (256MB for Windows XP and Ubuntu). We could, however, clone VMs for distribution or reuse or for versioning of guest VMs (all subject to adequate licensing, of course).

Having no tools/specific integration offered for Ubuntu 8.10 meant no shared folders or enhanced drivers were available, unlike the high integration Parallels offers for Mac platforms. And although USB and Bluetooth

worked, the USB camera did not. With USB integration, we were able to pair our phones via Bluetooth, and send and receive files on our sample phone. Yet the camera wouldn't display an image, although it was detected; natively, Ubuntu can find the camera and make it work.

A fingerprint reader that was built in to the smaller HP we tested with wasn't able to be virtualized, although it could be read by each operating system when it was native, rather than a guest. We were perplexed. The final insult was that with Ubuntu (or XP, below), Parallels popped up with the same cryptic error message. Ubuntu also wouldn't shut down properly; we had to manually stop it after shutting it down using Parallels Workstation stop button.

Installation of XP was done manually; there are no "greased" settings for it, unlike the Mac version. We still needed to install Windows drivers for USB components and they worked well. Our Bluetooth test worked well, and we paired quickly and sent files back and forth to our test cell phone. The USB camera was detected, but didn't work as it's a USB 2.0 device, and there's not enough driver bandwidth available for it — USB 1.1 only.

Shared folders were easy to set up between host and guest VM, but the level of application integration between host and guest is comparatively missing.

Overall, there's much less to tell about Parallels Workstation for Windows because there's far less there than the Mac version. Parallels has announced a new highly sophisticated version for Windows, but it wasn't available for testing. The version we tested works OK, but is a far cry from the Mac version. ■

Desktop virtualization performance results

We ran two sets of Java-based benchmarks (SPECjbb2005 and SPECjvm2008). The numbers represent operations per second. The number listed is an average of two runs.

TEST #1: This was a warehouse tracking application that was run on an HP EliteBook running Windows Vista as a host operating system. The guest operating systems were either Ubuntu or Windows XP.

VMware		Sun VirtualBox		Parallels Workstation		Microsoft VirtualPC	
Ubuntu	XP	Ubuntu	XP	Ubuntu	XP	Ubuntu	XP
8793.5	8024.5	7610	7884.5	6384.5	7881.5	863	7778

TEST #2 (MAC): This test was run on a MacBook Pro as the host.

VMware		Sun VirtualBox		Parallels Workstation		Microsoft VirtualPC	
Ubuntu	XP	Ubuntu	XP	Ubuntu	XP	(not supported)	
21567	14024	16736	17390	27414	26763		

TEST #3 (SPECJVM2008) (WINDOWS): This test measured performance across three benchmarks, crypto, mpegaudio and xml. For space reasons, we're only showing the xml results.

VMware		Sun VirtualBox		Parallels Workstation		Microsoft VirtualPC	
Ubuntu	XP	Ubuntu	XP	Ubuntu	XP	Ubuntu	XP
26.91	16.29	25.17	16.93	27.71	16.9	7.95	17.09

TEST #4: A MacBook Pro is the host machine.

VMware		Sun VirtualBox		Parallels Workstation		Microsoft VirtualPC	
Ubuntu	XP	Ubuntu	XP	Ubuntu	XP	(not supported)	
49.45	33.43	48.97	33.89	50.06	49.38		

Go online for complete results at <http://tinyurl.com/m2oy79>

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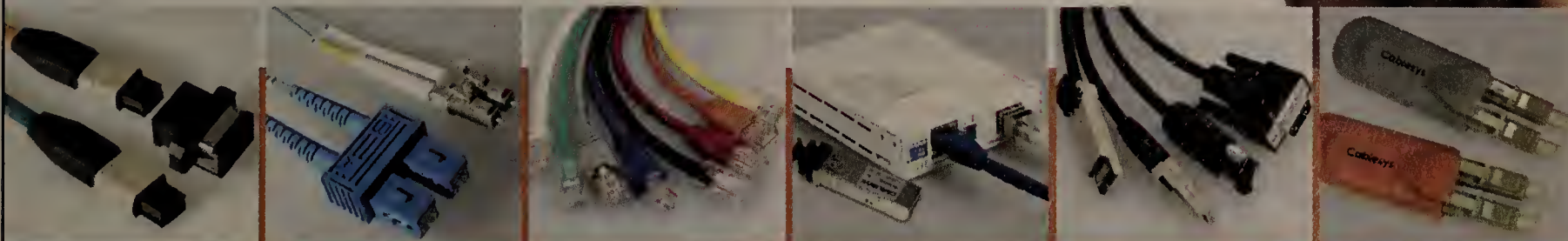
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VMware Workstation for Windows

Fast, full-featured, well-integrated

We found VMWare Workstation for Windows to be quite a bit more advanced than its competition. The product has the USB 2.0 support missing from Parallels, and has a unity mode that's similar to the one VMware implements on Fusion for Mac.

Like VirtualBox on Windows, VMware Workstation can also be connected using remote display techniques such as VNC. And more interestingly, you can use two or more monitors if your hardware supports this.

Snapshots, including nested snapshots, worked similarly to VMWare's Fusion product. Nesting snapshots let us perform rollbacks to previous versions of the guest operating system — useful for testing and tech support applications of VMware Workstation.

Because USB 2.0 is supported, we could capture movies in Windows XP and Ubuntu as guest virtual machines (VM). The video speed was very good at both capturing and replay.

Running XP guests

Running a Windows XP guest on Windows XP might seem strange, but it's frequently done for many reasons. VMware Workstation, like the VMware Mac version, readily makes "greased" settings for Windows XP and it was a breeze. We did, however, have to install Bluetooth drivers, because the default representation to a guest machine doesn't include native machine Bluetooth resources in hardware discovery. But we also had great success (after driver installation) with the Webcam. VMware passed the Bluetooth test very well — and delivered the highest speed transfer of all of the combinations we tested, perhaps owing to the expanded USB 2.0+ device support.

The VMware unity mode worked similarly to the Mac version, where guest VM applications were presented natively. However, we had to use a key-combo to switch to them, unlike the more native feel of the Mac version. Sharing folders took a little more work.

There were two ways to share folders in Workstation. One was the older method that required us to map shares as though they were Server Message Block shares. This meant mapping drives through universal naming convention nomenclature like \\host\Shared folders\share_name. The second option was simpler. By checking the option "Map as network drive in Windows guests", we were able to see the share directly in My Computer. Dragging and dropping files between XP and XP guest worked simply.

The dual display option worked OK in full-screen mode, but only in certain configurations. The default is where the external display is to the right or bottom of the main display in the host operating system display properties.

We tried setting it in different locations (external display set above or to the left) but VMware had a message that said: "The current arrangement of monitors is not supported." Also, trying to change display settings (resolution or position) within the guest operating system should not be attempted as the screens become mangled between the two displays (similar to Fusion).

Running Ubuntu guests

Ubuntu installation is supported like XP -- predefined selections made installation simple. By adding an application called obex tool (obex means object exchange in Bluetooth-speak), we were able to pair our test phone and move data back and forth, but only at about 2Kbps — much slower than under Windows XP-XP host/guest combinations we tested. We were also able to connect to the Webcam and other devices, but weren't able to use the Webcam; other USB devices worked handily.

VMWare's unity mode for Linux is experimental, yet worked for us in

our limited testing. Unlike VirtualBox for Windows, VMware Workstation displays the running applications in the host operating system taskbar. When first entering unity, a small start menu-like apparatus is displayed in the lower left corner just above the host operating system start menu. This menu had a list of Ubuntu's applications (similar to the main Ubuntu menu). The problem with this applications selection menu is that it disappeared when we switched to any other application. Just switching back to Workstation does not redisplay it. Maddeningly, a key combination must be entered to show it again, each time you want to use it.

VMware Workstation guest tools are installed through a script from an attached virtual ISO. The tools are compiled and then inserted into the Linux kernel on the Ubuntu guest. The only problem we had was that if you set the Ubuntu guest to autologin, then the VMware-user start-up program does not run upon boot. Therefore, we had to start it manually.

Host/guest shared folders were mounted under /mnt/hgfs and they worked as expected. Drag and drop between host and guest worked, except it wouldn't drop to the desktop, so we had to have a FileManager window open to do this.

Dual displays worked the same way as the Windows XP guest VM (automatically detecting it in full-screen mode), which also included the same limitations (the external display had to be positioned to the right or bottom of the main display).

Of the four Windows-based desktop hypervisors we tested, VMWare's was the most integrated, and is the one most likely to be recommended for users who need to host a guest operating system — especially for Windows XP rehosting, as it's fast, and has a high common denominator feature set. ■

How we tested desktop virtualization

On the Mac side, we used a MacBook laptop with a 2.2GHz Core 2 Duo. It had 144MB virtual RAM (integrated Intel Graphics chip) shared with 3GB of dynamic RAM. We also checked graphics and features on a MacBook Pro.

Each guest operating system and virtual machine was assigned 768MB of RAM and 128MB of VRAM where available (VMware's Fusion automatically assigned 128MB of VRAM, although there didn't seem to be an option to change the amount).

For the Windows XP/Vista host testing, we used an HP EliteBook 2530p with 3GB RAM, a 1.86GHz Intel Core2 Duo and an older HP Pavillion DV9000 (2.33Ghz Core Duo, 4GB DRAM, internal 200GB hard disk). We assigned Windows XP and Ubuntu guests a pre-allocated 8GB and 6GB disk space, respectively. We performed multiple tests with one virtual CPUs. Because Virtual Box didn't support multiple vCPUs, we didn't test them.

Parallels supports as many as four vCPUs (eight experimentally) and Fusion supports as many as two (four experimentally). We could not set more CPUs than our computer had. Also, our SPECjbb2005 benchmark had a time drift problem with Parallels. The problem arose from an option in Parallels that syncs host time with Mac OS X time. Turning that off solved the problem, and our results reflect accurate timing.

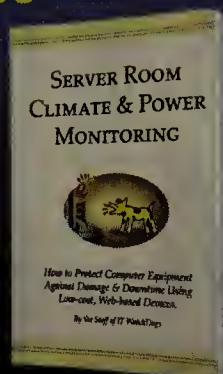
We tested the environment with just the VM running, meaning no additional applications were loaded (besides the Finder and other background services.)

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Virtual Box 2.2 For Windows

Lacks sophistication, but has some cool features

VirtualBox for Windows was comparatively primitive, but had some interesting features. There are some show-stoppers that will prevent most from wanting to use it, however.

The first problem is that there's no drag-and-drop of files/folders between a host and guest virtual machines (VM). This forces copies between host and guest through CLIs. Systems professionals may not mind, but the help desk switchboard will light up if civilians try it.

USB support was horrendous. When it worked, it worked OK. Of the upsides, it's possible to run guest VMs in the background, and no matter what they are, they can be accessed via Remote Desktop Protocol. This worked for all the guests we tested. Virtual Box also has 'seamless mode,' which allows the VM to be integrated more into the desktop operating system and hides the guest VM's background for application use.

Virtual Box installed guests without special settings help that's specific to the guest operating system version, and recommends a comparatively low amount of memory (192MB for Windows XP and 384MB for Ubuntu). And although there's no dual-display support in guests, it's possible to run the VM full screen on an external monitor.

And although iSCSI support is not available in the GUI, it is available from the VBoxManage.exe command-line application. This worked well, and we were able to use an iSCSI disk as a boot device and could install a guest VM on it. We could also create guest snapshots, and restore them to Windows XP and Ubuntu.

Running XP guest

Windows XP ran normally, and we had no problems installing it. VirtualBox-installed drivers worked fine, although we had some problems with USB support. As an example, upon the first time connecting a USB device, Virtual Box would install a windows driver, then it would not capture this event and it would say 'not supported.' If we tried to connect the device again, the VM would freeze and we would have to kill all the VirtualBox processes and start again. This happened when the host was Windows Vista or XP.

Bluetooth, Web camera and fingerprint reader weren't recognized at first, but after rebooting the host operating system (after first having tried to connect the Bluetooth to the VM), we were able to get the XP VM to see the Bluetooth module. It was necessary to download the Bluetooth and other drivers for our hardware to make them recognized; then we were able to use them. Unfortunately, when trying to connect to the camera, XP gave an error message about too much USB bandwidth usage and was unable to show a picture. We disconnected other devices and tried again, but it never worked.

Shared folders weren't easy to find. As an example, typing a share name directly (example: \\vboxsvr\sharename) didn't work, but browsing to it did (which showed the same address when typing directly).

Under seamless mode, the guest Start menu is displayed just above the host Start menu, so it looks like there are two start menus. With Vista as a host, it's pretty easy to tell the difference, but when running XP within XP, it looks like two start menus on top of each other.

Running XP guest

Like the Windows XP and Vista installation, Ubuntu installed into VirtualBox 2.2 without any difficulties. The VirtualBox tools (actually drivers) easily installed and compiled as a Linux script. Our Bluetooth pairing and file movement test passed. The USB devices were recognized, but our USB cam didn't work, similar to what happened in XP. Our small HP notebook's fingerprint reader device doesn't have drivers for Ubuntu, so it couldn't be detected or tested.

The Ubuntu Seamless mode worked similarly to how Windows XP hosts Windows. Moving hosted windows around by dragging them proved choppy and somewhat difficult, also showing remnants of the Ubuntu desktop background. But otherwise it worked well. Sharing folders required us to use the Linux mount command, but instructions are given.

VirtualBox for Windows is similar in functionality to the VirtualBox Mac version and it's reasonable for systems professionals, but civilians won't be happy. We were impressed by the seamless mode, but this is a free project, and it needs work. ■

Microsoft's Virtual PC 7.0

Designed for a Windows-only world

Microsoft's VirtualPC was once available for Macs and Windows, but now is only available and supported for Windows-based hosts. There are no guest tools available for other operating systems, and all other operating systems are installed as "other". There's no 64-bit guest virtual machine (VM) support, although there is a 64-bit version of Virtual PC.

If you want USB support, forget it because it's not available. There is no snapshot support. You can get a full-screen view of guest operating VMs, but there are no integrated views. It's possible to use an external monitor for the guest, if you simply must.

Guest installations have no "greased" or enlightened settings, even for Windows guests. We found the installation to be the equivalent of a native installation for the Ubuntu guests we tried, but the recommended amount of memory can be weak (example: recommended is 128MB for Windows XP).

Running Ubuntu guests

Installing Ubuntu required changing some of the boot options, as we needed to use safe-mode graphics and also specify the 'noapic' option; otherwise, no installation was possible (rather, booting the installation CD was impossible).

There were no Linux operating system choices available when installing; by contrast, there were quite a few Windows versions listed and then there was "other". Sound card support was unavailable, performance was slow and networking worked. Interaction by mounting file systems was absent unless we used Windows and SAMBA peer networking as though they were two entirely separate machines.

Running Windows XP guests

As mentioned, Windows guests are welcome here. We found drag and drop file/folder movement worked well between Windows XP guests on hosts of Windows Vista/XP. Shared folders aren't required.

Windows guest tools worked well to boost performance and enabled shared folders to work with no problems. The share folder was mounted as a drive in Windows. Still, guests had no access to native sound cards, any kind of USB devices and most other native host hardware.

Applications interaction is still separate-but-equal, with 32-bit application execution possible if the operating environment (host or guest) allows it. You can run Vista-only applications in a Vista guest, but you can't launch them from XP and expect them to work — they only launch when executed from the guest. It's primitive, and we expected more. ■

■ IPv6, from page 1

director for the North American IPv6 Task Force and an HP Distinguished Technologist. "You can't ignore IPv6. You need to take the minimum steps to secure your perimeter. You need firewalls that understand IPv4 and IPv6. You need network management tools that understand IPv4 and IPv6."

"Although they're not thinking about IPv6, for most of the Fortune 500, it's in their networks anyways," agrees Dave West, director of systems engineering for Cisco's public sector group. "You may not see IPv6 today as a business driver. But like it or not, you are running IPv6 in your network."

IPv6 is the long-anticipated upgrade to the Internet's main communications protocol, known as IPv4. IPv6 features vastly more address space, built-in security and enhanced support for streaming media and peer-to-peer applications. Available for a decade, IPv6 has been slow to catch on in the United States. Now that unallocated IPv4 addresses are expected to run out in 2011, the pressure is on U.S. carriers and corporations to deploy IPv6 in the next few years.

IPv6-based threats are not well understood, but they are becoming more prominent. For example, the issue of IPv6-based attacks was raised at a June meeting of the National Security Telecommunications Advisory Committee, a high-level industry group that advises the White House about cybersecurity.

"We are seeing quite a bit of command and control traffic that is IPv6," says Jason Schiller, senior Internet network engineer, global IP network engineering for the public IP network at Verizon Business. "Hackers are trying to leverage IPv6 to fly under the radar. We're seeing a lot of bot networks where the command and control is under IPv6. We're also seeing illegal file sharing that leverages IPv6 for peer-to-peer communications."

Rogue IPv6 traffic is an emerging threat for network managers. The biggest risk is for organizations that have decided to delay IPv6 deployment because they don't see a business driver for the upgrade — a category that includes most U.S. corporations.

U.S. federal agencies are in a better position to protect themselves against IPv6-based threats because they have enabled IPv6 across their backbone networks. Federal agencies are moving ahead with plans to integrate IPv6 into their enterprise architectures and capital investments.

Rogue IPv6 traffic "is a very real threat," says Sheila Frankel, a computer scientist in the Computer Security Division of the National Institutes of Standards and Technology (NIST).

"People can have IPv6 running on their networks and not know it. Computers and other devices can ship with IPv6 turned on. Ideally, if you're not prepared to protect against IPv6, it should be turned off for all the devices on your network. You need to be prepared to block it at your perimeter. You want to block it coming in

and going out," Frankel says.

Frankel recommends that organizations that don't want to run IPv6 in production mode buy firewalls and intrusion-prevention systems (IPS) that can block both native and tunneled IPv6 traffic.

"You should be blocking not only pure IPv6 traffic but also IPv6 traffic tunneled inside of other traffic," he says. "Network operators have to be aware of the ways IPv6 would normally be tunneled in IPv4 traffic and in the different types of transition mechanisms, and they have to become aware of the rules necessary to block these various classes of traffic."

Where does rogue IPv6 traffic come from?

IPv6 traffic gets on your network because many operating systems — including Microsoft Vista, Windows Server 2008, Mac OS X, Linux and Solaris — ship with IPv6 enabled by default. Network managers have to disable IPv6 on every device installed on their networks or these devices can receive and send IPv6 traffic.

"We're probably talking about 300 million systems that have IPv6 enabled by default," estimates Joe Klein, director of IPv6 Security at Command Information, an IPv6 consultancy. "We see this as a big risk."

Experts say it's likely that network managers will forget to change the IPv6 default settings on some desktop, server or mobile devices on their networks. At the same time, most organizations

Enabling IPv6

Hundreds of millions of network devices are shipping with IPv6 enabled by default:

378 million 3G SIM cards sold in 2008

180 million Microsoft Vista systems sold as of July 2008

37 million IPTV subscribers estimated for 2009

2 million Mac OS X systems shipped in Q1 2009

Total: 597 million

SOURCE: COMMAND INFORMATION

have IPv4-based firewalls and network management tools that don't automatically block IPv6 traffic coming into their networks.

"The most common IPv6-based attacks that we're seeing right now are when you have devices on the edge of your network that are dual stack, which means they're running IPv4 and IPv6. If you only have an IPv4 firewall, you can have IPv6 running between you and the attacker," Klein says. "The attacker is going through your firewall via IPv6, which at that point is wide open."

Another common problem is IPv6 traffic tunneled over IPv4 using such techniques as Teredo, which is supported by Microsoft, or the alternative 6to4 and Intra-Site Automatic Tunnel

Addressing Protocol (ISATAP) approaches.

"The typical IPv4 security devices are not tuned to look for IPv6 tunnels," Klein says. "They offer very weak defense, which is kind of scary."

Klein says the only way network managers can discover IPv6 devices on their network is to run IPv6. Even then, it's extremely difficult to discover IPv6 tunnels.

"You might be able to find the top three tunnels but not all the other sub-tunnels," Klein says. "You can tunnel IPv6 over HTTP over IPv4. How are you going to find that?"

To battle these threats, Command Information is offering software called Assure6, which operates in conjunction with deep packet inspection systems to identify IPv6 traffic tunneled over IPv4. Similarly, the McAfee Network Security Platform offers full IPv6 and tunnel inspection. Cisco and Juniper offer IPv6-enabled routers, firewalls and other systems that let network managers set IPv6-related security policies.

Klein says he gets one or two calls a month from organizations that have been attacked through rogue IPv6 traffic.

"One of our honeypots that we have set up saw a botnet using an IPv6-only attack," Klein says. "It was hiding itself as IPv4 through our router, and it was attacking and issuing command and controls to a botnet in the Far East."

The number of IPv6 attacks is small but growing, LeMaster says.

"There are fewer people that have IPv6 enabled, so it's not as rich a target as IPv4," LeMaster adds. "The majority of the vulnerabilities are over HTTP. They're application related, where IPv6 is just the transport for those security concerns."

Frankel says IPv6-based threats are common enough that every network manager needs a plan for mitigating them.

"Nobody today will deny that they have to do something about viruses or about spam," Frankel adds. "It's fair to say that rogue IPv6 traffic is in this category of threats that's going to hit you if you ignore it."

Experts disagree about whether it's best for network managers to block IPv6 traffic or to enable IPv6 traffic for monitoring purposes.

Most say that if an organization isn't prepared to support IPv6, it should block IPv6 traffic coming into and leaving its network using IPv6-enabled routers, firewalls, IPSs and IDSs.

Network managers "should be creating policies...that look for IPv6 traffic and if they see it to drop that packet," LeMaster says. "Within their security incident manager solution they need to look at the profiles of traffic coming into their network. They need that visibility. If they see IPv6 traffic, they need to find out what host it's coming from or going to, and turn that traffic off."

But these experts admit that blocking IPv6 traffic is a temporary solution because a growing number of your customers and business partners will be supporting IPv6. ■

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BACKSPIN BY MARK GIBBS

Lost in LinkedIn translation

EVERY NOW AND then a press release attracts my attention not because it is actually good but because it is just plain silly or self-serving or spec-

cious, or all of the above.

A recent press release from the American Translators Association concerning a survey that LinkedIn sent to ATA members struck me as being in the "all of the above" category.

The release began: "The president [Jiri Stejskal] of the American Translators Association (ATA), the largest organization for professional translators and interpreters in the U.S., today blasted the CEO of LinkedIn in a letter, calling its plea for free translation services from the site's own members, 'misguided, troubling and clearly incompatible with the operation of a for-profit enterprise.'"

Now, what this audra (that's Lithuanian for "storm") in a tebolli (Icelandic for "teacup") is all about is that LinkedIn's survey included a multiple-choice question: "What type of incentive would you expect for translating LinkedIn's site?"

The choices ranged from "I would want to do this because it's fun" through "Highlight your ... work [as] the #1 translator ... in [language name]", to "Upgraded LinkedIn accounts." There was also a final option, "other", where the respondent could enter whatever they wanted.

It all seemed innocent ("ártalmatlan" in Hungarian) enough. What LinkedIn was doing has been described as "crowdsourcing," which, to quote Wikipedia, is "a neologism for the act of taking a task traditionally performed by an employee or contractor, and outsourcing it to an undefined, generally large group of people or community in the form of an open call." But Stejskal was having none of it.

Stejskal exclaimed ("vzklikniti" in Slovenian): "It's astonishing that

[LinkedIn], whose very existence is predicated on fostering professionalism, would compromise its own professionalism by approaching its members, hat in hand, seeking donations for a for-profit entity."

Now let's consider the issues ("izdati" in Serbian) that make this position rather odd. First, LinkedIn was only asking whether the translators would be interested in the project, not demanding that they participate.

There was no coercion, no threats of retribution ("punizione" in Italian), just a "hey, would you be interested and would any of these compensations work for you and if not, what would?" Second, I'd hazard a guess that the majority of translators using LinkedIn are doing so using free accounts.

But, it transpires, Stejskal was not alone in his anger ("gniew" in Polish). It seems that translators are a relatively easily insulted bunch and following the LinkedIn survey Twitter was soon a-tweet with angry tweets and a LinkedIn group named "Translators against Crowdsourcing by Commercial Businesses" was formed. There was even an article in The New York Times about the fracas (that's French).

It appears that the translators' outrage couldn't have been greater even if you were to suggest that they are a rather easily insulted bunch whose mothers ("moeders" in Dutch) wear army boots. What I don't get is exactly what they are outraged about. How can they blame LinkedIn for asking? It's not like other organizations haven't tried the same thing.

So, to the ATA, its president, and all of its incensed members who are feeling slighted by LinkedIn's attempt at crowdsourcing: Get over it. Ignore it. You're just making a iddetli fırtına ("tempest" in Turkish) in a die Teekanne ("teapot" in German).

In case translators try to track him down Gibbs doesn't live in Ventura, Calif. They can, however, write to him at backspin@gibbs.com.



NETBUZZ BY PAUL McNAMARA

Ringtone royalties are music to these ears

THIS SPLENDID IDEA inexplicably managed to raise a ruckus right before the holiday weekend: Every time a musical ringtone plays in public —

suggests the American Society of Composers, Authors, and Publishers — carriers should pay a royalty for the "performance," a cost that would unfortunately need to be passed along to wireless phone users.

Consumer advocates and online pundits, whipped into a lather by an unusually shortsighted Electronic Frontier Foundation, turned their amplifier dials up to 11: "This is an outlandish argument from ASCAP," huffed an EFF attorney. "Are the millions of people who have bought ringtones breaking the law if they forget to silence their phones in a restaurant? Under this reasoning from ASCAP, it would be a copyright violation for you to play your car radio with the window down!"

Exactly! Let's make the "violators" pay. How does \$1,000 per "performance" sound? ... I say it sounds better than hearing "Achy-breaky Heart" in a pokey elevator. It sounds better than another tinny version of "London Calling," which stopped being funny, oh, a few million ringtones ago. ... And don't get me started on Crazy Frog.

At a grand a pop, how long do you think it would take before diners don't forget to silence their phones in a restaurant? How long before we can watch movies without an alternative sound track from the audience? How long before run-amok ringtones don't interrupt press conferences being conducted by the leader of the free world? Not long.

I know what you're thinking, though: How would such a punitive system ever be enforced and isn't \$1,000 a bit harsh?

Well, if we've learned anything in recent years it's that carriers have the technology to monitor what their customers are doing. And, ASCAP apparently has more than enough attorneys on retainer to put some teeth

behind the billings.

As for \$1,000 being too steep: Vibrate stays free, people.

Another pair of deadline-extending dodges

A recent item about the Web site Corrupted-Files.com had one reader reaching into the memory bank for a similar tale that deserves sharing.

Corrupted-Files, if you missed it, sells unreadable Word, Excel and PowerPoint files to students and others who in turn submit them to professors, bosses or clients in the hope that the files won't be opened — and "the problem" discovered — until they have had a chance to actually finish that term paper or work project.

Writes Bob McNally of Worcester, Mass.: "In the '80s I was doing contract programming in Z80 assembler for a company that manufactured teller terminal systems.

"When a project was running behind and the customer needed a delivered system, there was a manager who would write a letter for the delivery of the software. He would then staple the 5.25 inch floppy diskette to the letter and mail it to the customer. When the customer called about the disk with the staple through it he would apologize about 'the secretary that keeps doing that' and promises to send a new disk immediately.

"If the software was ready they would get a diskette with the updated software. If he needed to buy a few more days, another diskette would be prepared by inserting a small piece of double-stick tape into the floppy so that it would not spin when inserted into the drive. A second letter and the diskette would be mailed to the customer. ... This guy could stretch a delivery date by a couple of weeks easily!"

Have one of your own to share? The address is buzz@nww.com.

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